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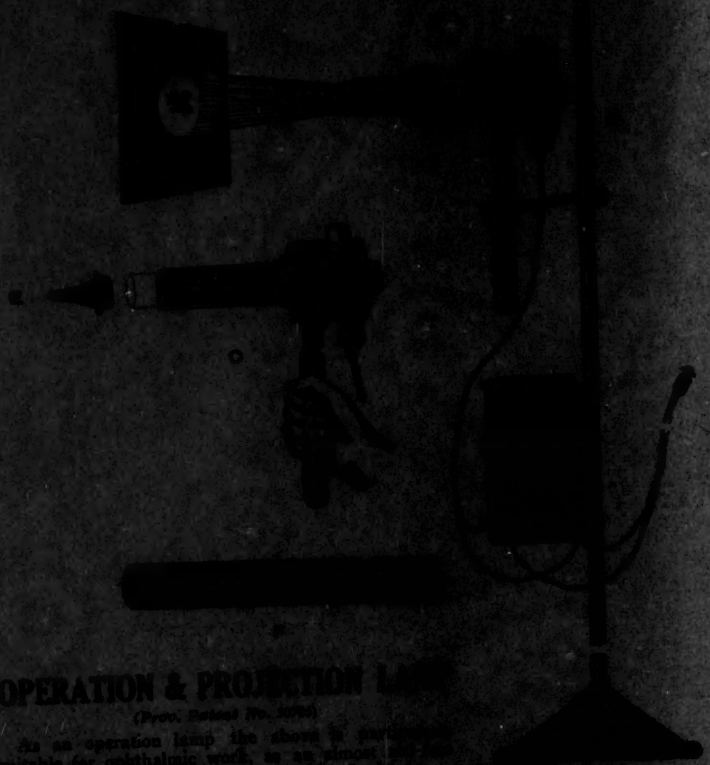

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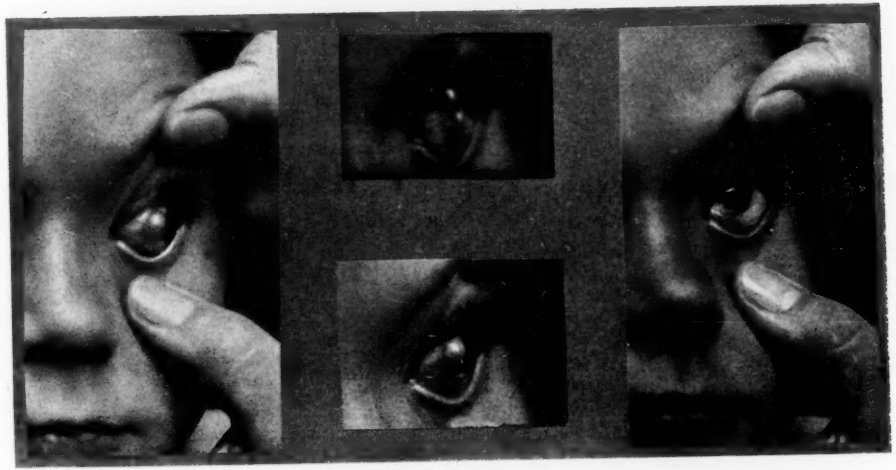


Photographs of Scleral Cyst

THE BRITISH JOURNAL

OF

OPHTHALMOLOGY,

APRIL, 1926

COMMUNICATIONS

EPITHELIAL CYST OF THE SCLERA

BY

C. H. USHER

ABERDEEN

IN the *Transactions of the Ophthalmological Society* for 1921, Goulden and Whiting published a case of epithelial cyst of the sclera. They were able to find only eleven similar cases in the literature. As these cysts are so unusual the following case, in which the clinical characters and microscopical appearances of the cyst indicate that it belongs to the same group, seems to be worth recording.

History of Case.—A healthy boy, aged 4 years, was brought to the hospital on account of a swelling on his left eye. According to the parents' account, a small part of the swelling had been noticed at the time of birth, but the main portion was not observed until two years later. There had been no difficulty at the time of his birth and there had been no known injury to the eye. The swelling caused no discomfort.

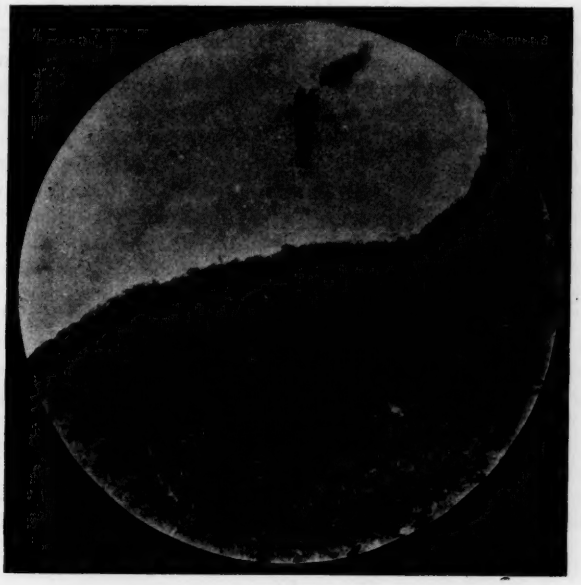
When examined on December 4, 1923, a blue raised area was present on the left eyeball adjoining the corneal margin at its nasal side. It measured 4.5 mm. in length, its long axis lying vertically, and 2.5 mm. in breadth. There was no congestion. A much smaller, blue, circular, slightly raised spot adjoining the nasal side of the larger swelling, had been noticed at birth, and had not altered in appearance. The larger swelling had been present for

two years. The other parts of this eye presented nothing unusual. The pupils were equal and contracted to light, and the fundi were normal. The larger swelling on the left eye gradually increased in size; by February 6, 1924, it measured 6 mm. in length and 3.5 mm. in breadth, and showed indications of lobulation. On palpation it felt firm and it did not move over the sclerotic with the conjunctiva. Two days later, the swelling was punctured when

Micro-photograph of section of Scleral Cyst ×100

clear fluid escaped and both swellings collapsed, showing that they were connected. From the lower part of the cyst a small piece of the anterior wall was removed. By April 1, the swelling was again as large and presented the same appearance as formerly. It continued to enlarge, so that by July 5, it measured 15 mm. in length and overlapped the corneal margin. The photographs show the situation and lobulated character of the cyst, which was translucent and generally of a bluish appearance with yellow at the centre of the uppermost and of the lowermost parts of the swelling. Pressure on the cyst made no alteration in the depth of the anterior chamber or in the size of the cyst. On July 10, 4 minims of a clear faintly straw-coloured non-coagulable fluid

was drawn off from the cyst with a hypodermic syringe and transferred to a small sterilized glass tube. The cyst collapsed at all its parts. Two portions of the anterior wall, including the conjunctiva were excised, one from the upper part, the other from the lower part, and placed in 10 per cent. formalin. The interior of the cyst was quite smooth and resembled sclerotic. At its upper part a strabismus hook could be passed backwards for a distance



Micro-photograph of section of Scleral Cyst ×300

of 5 or 6 mm. There was no communication with the anterior chamber. A transilluminator applied to the outer or lower part of the eyeball caused no red reflex at the site of the cyst. When the boy was seen again on August 31, 1925, there was no recurrence of the cyst.

The fluid from the cyst was examined by Dr. Charles Reid, Department of Physiology, Aberdeen University, to whom I am indebted for the following report: "?slightly acid to litmus; alkaline to methyl red; neutral red turned orange (transitional colour); slightly acid to phenolphthalein; solid matter about 6 per cent.; organic solids 3—4 per cent.; inorganic solids 2—3 per cent.; protein present; some albumen and globulin; chlorides

present, definite reaction; phosphates, *trace present*; sulphates, doubtful, perhaps a very slight trace; urea present; sugar not present in measurable amount; *cholesterol not present*; blood pigment, *examination by spectroscope* failed to reveal absorption bands. On the whole, the composition of the fluid bears a definite resemblance to that of lymph." The fluid was sterile.

Microscopical examination of the cyst wall.—The interior of the cyst is lined by a stratified epithelium, which is clearly seen in both micro-photographs. The sections were stained by logwood and eosin or van Gieson's stain. Oval nuclei are seen arranged in several layers at some parts and in one or two layers at other parts. There is little or no indication of the cell wall. External to the epithelium is dense fibrous tissue forming a thick layer and containing some blood-vessels. This is separated by a looser tissue from the conjunctival epithelium. In sections stained by Weigert's elastic tissue stain numerous wavy dichotomous branching fibres are seen, mainly in the tissue between the dense fibrous tissue and the conjunctival epithelium. There is no trace of any foreign body, hairs or glands. As regards the aetiology of scleral cysts reference may be made to Goulden and Whiting's paper and to the discussion that followed it. In the present case the cyst appears to have been present at the time of birth.

The photographs of the present case were kindly taken by Dr. William Brown, and the micro-photographs of the sections by Dr. Alexander Low.

FREQUENCY OF METASTATIC CARCINOMA OF THE CHOROID

BY

C. H. USHER

ABERDEEN

IN Volume VII, 1923, of this journal an account is given of three cases of metastatic carcinoma of the choroid, one in a woman with mammary cancer and the other two in males. Reference is made there to the apparent infrequency of such cases, and of 107 cases collected from the literature and tabulated at that time the majority of cases, numbering 60, were single cases reported by 60 different observers. Fifteen other observers each recorded two cases, three other observers each reported three cases, and two others, Ginsberg and Fehr, have each recorded four cases. There is no record of five cases, or more, having been published by any one author. The conclusion, therefore, as judged by the number of reported

cases, is that metastatic carcinoma of the choroid is evidently of infrequent occurrence. Since the above-mentioned paper was written another case has presented itself, short details of which are as follows: Mrs. M., aged 47 years, had an operation for cancer of her right breast in May, 1919. Four years later, May 16, 1923, her health was satisfactory, she had a good appetite and slept well, but she was evidently nervous and had some headache and giddiness in the morning. There had been difficulty in seeing for a few months and on examination a large retinal detachment was seen in the lower part of her right fundus oculi. The left fundus was normal. On July 26, she reported attacks of pain in the right eye which kept her awake at night. Vision in this eye was now reduced to perception of light, tension was +1, and the anterior chamber was shallow. The left fundus was normal. Mr. Marnoch, professor of surgery, who had operated for her breast cancer, saw her again in November, 1923, when he found "recurrence on forehead, a bony nodule at lower end of right ulna —also one over lower part of back and almost certainly a spinal metastasis (pain extending down her legs)." She became very blind shortly before her death and the pupils were dilated though she was having large quantities of morphia, so it is probable that each choroid contained a tumour. In one-third of the cases of metastatic carcinoma of the choroid, a tumour occurs in both choroids. Death occurred on January 21, 1924. There was no post-mortem examination, but permission was obtained to remove the right eye which was excised and a flat carcinomatous growth was found in the choroid with its greatest thickness, 1.25 mm., at the posterior part of the choroid. Towards the edge of the growth where the carcinomatous cells are arranged in columns only the outer part of the choroid is occupied by the tumour. The retina is completely detached except at the optic disc and ora serrata. The root of the iris is adherent to the cornea.

The detachment of the retina had first been observed eight months before death. The first evidence of metastasis was failing vision and this did not occur until some four years after the operation for the breast cancer.

There can be little doubt that, although there was no autopsy, a case seen in 1904 was one of metastatic carcinoma of choroid. A female, aged 42 years, complained of defective vision of her left eye; her left breast had been amputated for carcinoma two years previously; there was a diffuse grey swelling immediately below the left optic disc and macula which later extended to upper part of macula and was focussed with +6D., retinal vessels on the swelling were not tortuous. The liver became enlarged and was believed to contain carcinomatous growths. Death occurred six months after vision of the left eye was found to be defective.

THOMSON'S CAPSULAR CATARACT

BY

T. HARRISON BUTLER

BIRMINGHAM

IN the BRITISH JOURNAL OF OPHTHALMOLOGY for June, 1922 Ernest Thomson described a series of cases of opacity in the lens capsule of children. John Foster published a similar case in the same journal for August, 1924.

Thomson suggests that the incidence of this class of opacity is 1:1,000. This figure appears to be high. I find that during the past thirteen years I have examined at the Coventry School Clinic approximately 8,000 children. All have had the pupil dilated, all have been refracted by retinoscopy, and practically all have had a fundus examination. The condition described is so obvious that it is impossible to overlook it, and yet but two cases have come under my notice, one some years ago, and the second quite recently. My case incidence would be about 1:5,000 for I have examined many children apart from clinics.

My first case showed a brown opacity in the centre of the anterior capsule, some peripheral white opacities superficially in the lens, and some posterior synechiae. It corresponded with one type described by Thomson. I have tried to get hold of the child for slit-lamp examination but have failed.

The second case is a girl, aged 10 years. Her acuity in the right, affected, eye is 6/18 with plus 2.5 sphere and plus 3.5 cylinder, axis 80; that of the left, normal, eye is 6/12th partly with plus 2.5 sphere and plus 2.5 cylinder axis 100.

In the centre of the pupillary area there is a brown stippled area through which the fundus is not quite clearly seen. In the north-east periphery there are three bluish-white, cuneiform, superficial, lental opacities having the white-of-egg tone mentioned by Thomson.

The appearance seen is shown in the plate. Fig. 1 depicts the eye as seen with the slit-lamp and corneal microscope under a magnification of 9. The brown patch resolves itself into a collection of dots which are obviously pigment granules upon the surface of the anterior capsule. Examination under a magnification of 23 and a narrow beam showed that the white opacities were entirely capsular and that the underlying cortex was perfectly transparent and normal. Under this magnification the pigment granules were seen to be stellate in form. Fig. 2 shows the appearance of the dots under a magnification of 35. Each is a pigment star, and the poles are prolonged as grey filaments which here and there anastomose and interlace. In fact the picture is

that of the collections of "stars" which we find so frequently upon the anterior capsule. The only difference is that the usual collection is much less extensive, in some cases consisting of two or three stars only. Probably a careful search will show them in one individual in twenty or even more frequently. These stars are vestigial remnants of the pupillary membrane. In my second case the whole character of the "stars" was typical of such an origin and there was nothing to suggest an inflammatory source. In my first case, although there were signs of past inflammation, the

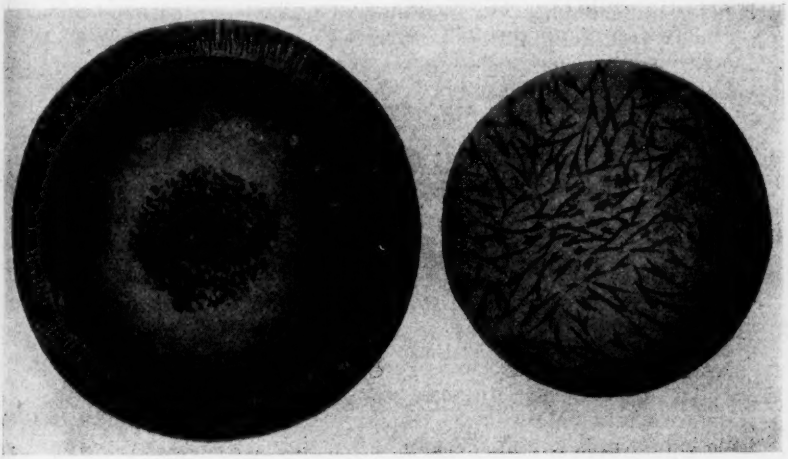


FIG. 1. FIG. 2.

presence of a "telegraph wire" strand of the pupillary membrane in addition to the central deposit makes it certain that the anomaly is a vestigial one and not an inflammatory state.

The mere fact that the pigment granules have a stellate form is not pathognomonic of the pupillary vestige, for in time all pigment deposits upon the anterior capsule tend to the star shape, and there may be grey filamentary networks in inflammatory deposits. But the regular shape of the stars, the tendency to be tripolar, and the nature of the grey filaments, all speak for the non-inflammatory origin in the cases under notice. The white areas, wholly in the capsule, are quite unlike any inflammatory formation, and most certainly suggest a developmental abnormality.

The fact that one of my cases and several figured by Thomson show signs of past inflammation wholly supports the view that the formations seen are due to the pupillary membrane, for, as has

been pointed out by Vogt and others, an ante-natal intrauterine inflammation of the eye, probably gonococcal, inhibits the normal retrogression of the tunica vasculosa. I have a case in which there is an anterior polar cataract with its "imprint" deeper in the lens, and a central corneal nebula. There is in this case an extensive network of vestigial pupillary membrane fibres attached to the nebula. Here an intrauterine inflammation of the cornea led to a central perforation, to an anterior polar cataract, and to incomplete absorption of the pupillary membrane. Other examples of incomplete retrogression with central capsular cataract are figured in the "Doyne Memorial Lecture" (*Brit. Jl. of Ophthal.*, Dec., 1924, page 581, Figs. 26, 27, 28).

I have no doubt that all cases of this nature are examples of persistent pupillary membrane.

A CASE OF RETROBULBAR NEURITIS FOLLOWING A SEPTIC WOUND

BY

T. HARRISON BUTLER

BIRMINGHAM

IT is commonly supposed that retrobulbar neuritis may have a septic origin, but the focus is generally a local one associated with orbital suppuration, with nasal sinusitis, or with an apical abscess. The toxaemia may be of systemic origin, as in diabetes, influenza, abdominal sepsis, and the like.

The following case is unusual, and, as it has a medico-legal aspect, seems worthy of record:

J.H.P., male, aged 26 years, was sent to me to be examined with reference to compensation. He gave a history that five months ago he sustained a cut just above the right wrist. The wound suppurated and eventually an abscess was opened on the inner aspect of the upper arm. At this time he noted that the sight of both eyes was getting misty, and that this was especially noticeable in a strong light. The sight has slowly deteriorated and now he cannot see to read or do any form of work.

The acuity of each eye is 2/60 and is not improved with glasses. There is no error of refraction. The media are clear. Each optic nerve shows well-marked temporal atrophy. The right nerve head has slightly blurred edges and small tags of white material pass from its edge to the retina. The great vessels have a film over their roots. There is still evidence of a past optic neuritis. The left nerve head is free from these signs of neuritis.

The fields of vision show slight concentric contraction. In each eye there is a large central scotoma, absolute for red and green, partial for blue, and relative for white. The nasal sinuses have been examined by Mr. F. Sydenham who reports that there is nothing abnormal. Mr. Roper Hall extracted eight septic teeth, but there has been no improvement from this treatment.

In this case, from a medico-legal point of view, it is impossible to exclude the septic condition of the arm as a cause of the defective vision, and the fact that the sight began to fail during the period of septic absorption from the arm, strongly suggests a causal connection. It is of course possible that the condition of the teeth may have had something to do with the sequence of events, but I cannot get away from the fact that the septic arm and the loss of sight coincided in point of time. My report was that in my opinion the blindness was directly caused by the accident.

Quite recently I was asked to see a case of acute glaucoma in a woman who was recovering from an operation for appendicitis. Her wound was suppurating and the green pus contained bacillus pyocyaneus. As there was no perception of light I concluded that there was something more than glaucoma of but 36 hours' duration. The eye yielded to eserin treatment and in two days I could see the fundus and discovered an optic neuritis. A week later the patient died suddenly from embolism. Here we have a case of a septic wound causing an optic neuritis perhaps of embolic nature, and if an abdominal wound can have this effect it is reasonable to suppose than a septic arm may act in similar fashion. In my case the retrobulbar neuritis was associated with a neuritis of the nerve head, an unusual combination.

EXCISION OF THE SUPERIOR TARSUS AND CONJUNCTIVA IN THE TREATMENT OF TRACHOMA

BY

G. FREEMAN HEAL, M.D., C.M., D.O.M.S.

WHILE in Bagdad in 1924 I was for some months in charge of the Ophthalmic Department of the Iraq Government Hospital where large numbers of Arabs attend for treatment, almost all of whom have trachoma. The majority of the natives of the country live their whole lives amid surroundings which are too insanitary and squalid for their condition to be comprehensible to a western mind. Apart from the ineffective ritualistic washing imposed upon them by their religion, Arab men and women never cleanse either

their bodies, their clothes, or their children. Their children instead of being washed have their faces tattooed, and their eyes smeared with greasy pigments to beautify them. This lack of cleanliness is undoubtedly one of the strongest aetiological factors in the spread of trachoma. It is a great rarity to find any native, at least in Bagdad, who is free from trachoma. Those who attend hospital generally have the disease in an aggravated form with one or more complications, among which trichiasis is probably the most distressing. The urgent necessity of relieving if possible some of this distress in a more effective way than by the routine use of the copper sulphate stick was very much impressed upon me, and I determined to try the effect of removal of tarsus and conjunctiva. This is a method of treatment originated by Heisrath and advocated by MacCallan. The difficulty I encountered was to find any description of a simple and satisfactory method of performing the operation or any details of its special difficulties or complications. Ultimately I succeeded in elaborating a satisfactory method of performing the operation which I did in fifty cases. All of these cases, with one exception gave the most gratifying results. I was unable to follow the cases for more than a month or so because I left the country, but the observed benefits were so manifest, and the likelihood of undesirable after-effects so remote that I venture to describe the results and to recommend the technique of the procedure as applicable both to the heavily infected East, and to many of the sporadic cases which occur at home. (One case done recently in England for severe trichiasis was entirely satisfactory.)

Indications

The operation is particularly indicated in active trachoma with a thickened or deformed tarsus. It is by far the most satisfactory way of treating trichiasis and I should operate on any case, quiescent or active, in which this complication was present.

I have no experience of the operation in very early cases of the disease and would not recommend it in such cases until the ordinary method of treatment had been given a trial.

There is a form of trachoma, seen only occasionally, in which there are no visible follicles, the palpebral conjunctiva is thin, bluish and angry, the tarsal plate is not perceptibly thickened, there is slight if any trichiasis, vascular pannus is present without any trachomatous infiltration of the cornea, irritation and photophobia are marked. Almost any active treatment seems to disagree with this form of trachoma, and I should hesitate to operate on it unless trichiasis were present. Otherwise than in this somewhat rare type of case the results are uniformly good. Subjective symptoms are relieved, pannus is much improved, a

hazy steamy cornea will often clear considerably, trichiasis is entirely cured, and the eye becomes quiet. In the East the Arabs are so gratified that they will fetch their relations to be operated on.

Operation

Anaesthetic.—Local infiltration with 2 per cent. novocain and adrenalin. Care must be taken to ensure infiltration of the lateral extremities of the tarsus as these sometimes escape the anaesthetic and give pain when cut. The conjunctival sac is anaesthetized with cocain in the usual way.

Preparation of Patient.—The skin of the face and lids should be thoroughly cleansed and painted with iodine. A towel with aperture for access to eye should cover face and hair.

Instruments.—Hypodermic syringe with long fine sharp needle for infiltration of lid with novocain. MacCallan's entropion spatula. Two pairs toothed conjunctival fixation forceps. Beer's cataract knife. A stout pair of toothed dissecting forceps for gripping the tarsal plate. Conjunctival scissors, fine pointed, not sharp pointed. Needle holder. Three curved needles. Ophthalmic silk No. 2.

Operation.—The upper lid is everted and raised on the lid spatula passed beneath it as high as the fornix. The spatula stretching the lid helps to prevent haemorrhage as well as affording protection to the globe.

Holding the knife vertically make an incision through the conjunctiva and tarsal plate extending the whole length of the lid margin and placed 1.5 mm. above the openings of the meibomian glands. This leaves a rim of tarsus in the lid margin for support. Insert one limb of the strong dissecting forceps into the centre of the incision and grip the tarsal plate. The operator now controls the tarsal plate with the left hand and holds the scissors in his right. The assistant with a pair of conjunctival forceps in his left hand holds backward the lid margin and its lashes. His right hand controls the lid spatula. With the points of the scissors pressed firmly against the tarsus, clear, by snipping from below upwards, all the attachments of the levator palpebrae and the tissues of the lid from the back of the tarsal plate. This dissection is continued above the tarsal plate so as to raise the conjunctival membrane almost as high as the fornix. Care must be exercised at this stage to avoid button-holing the conjunctiva. Next sever the lateral insertions of the tarsal plate with one snip of the scissor points at each extremity. Three sutures are next inserted from the skin surface of the lid, a central and two lateral. The central stitch is inserted first. Pass the armed curved needle through the skin and tissues of the lid about 5 mm. above the lid margin and just lateral to its centre, pick up the free conjunctiva

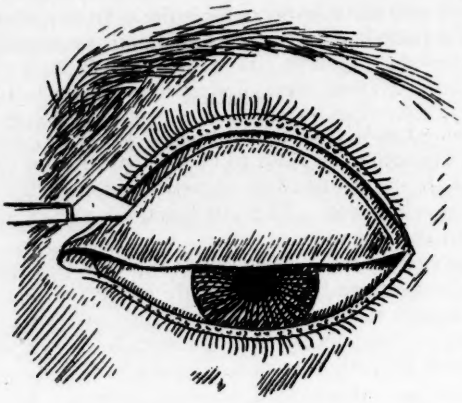


Fig. 1

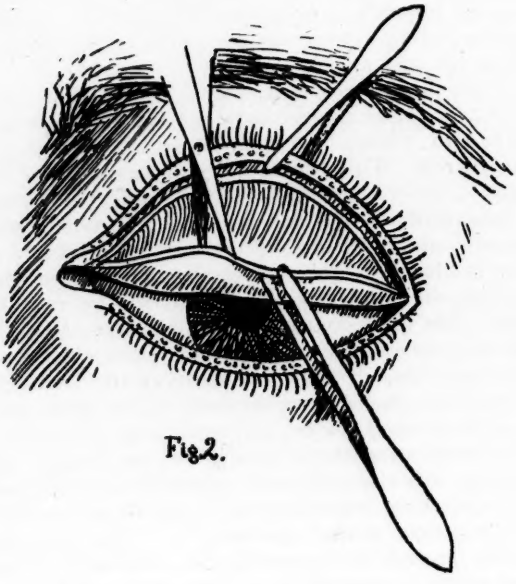


Fig. 2.

3 mm. to 5 mm. above the tarsal plate and return the needle through the lid to emerge a few mm. medial to its point of entry. The lateral sutures are inserted in a similar manner, but these

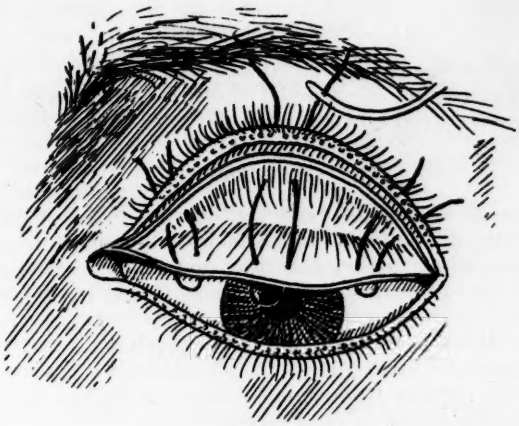


Fig. 3.

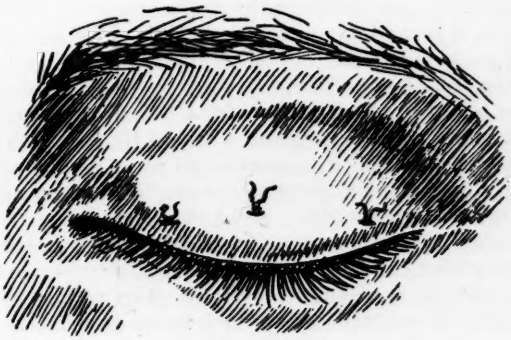


Fig. 4.

enter and emerge from the skin at a level nearer the lid margin (2—3 mm. from it)). The tarsus is now removed by cutting through the conjunctiva above its upper border, taking care to avoid the stitches. Next the three sutures are firmly tied; they should have been so inserted and tied that they cause the free margin of the lid to be rolled outward, thus correcting any trichiasis

present. This is one of the important points in inserting the sutures and the accomplishment of this eversion has to be constantly kept in mind during their insertion. A pad of gauze smeared with sterile vaseline is now bandaged over the eye.

After Treatment

The eye is dressed and bathed daily.

Hot fomentations are used if there is much swelling. The stitches are removed on the fourth day, the dressings on the fifth.

Remarks

Lids which have been subjected to previous operations offer considerable difficulty. They usually show loss of tissue and cicatrization which makes a further removal of tissue impossible if the lids are to remain capable of closing over the globe after the operation. Even in some of these cases, however, the removal of a small distorted tarsus and not too much conjunctiva will cure the trichiasis and leave lids which act as efficient coverings for the globe if the stitches be inserted somewhat higher so as to draw down the lid tissues in their grasp.

After the above operation where an area is left on the inner surface of the lid which is devoid of an epithelial covering one might expect to get cicatrization and contraction which would eventuate in a secondary entropion. This does not occur. The thickened puckered tarsus buried in the supple tissues of the lid, which themselves have undergone no reduction or contraction but rather the reverse, acts like a vicious framework, rolling in the lid and maintaining the entropion. The slight cicatrization following the removal of this framework is so small in comparison with the cicatrization and deformity of the original tarsus that the gain is sufficient to maintain the cure of the trichiasis.

The reasons for the arrest of the trachomatous process and the marked improvement following the operation are not altogether clear. Where the tarsus is hypertrophied to a mass of ischaemic and partially degenerated scar tissue it seems reasonable to suppose that it acts as a foreign body in the lid. On its removal the cornea is covered by a soft fleshy curtain and not by a hard resisting visor, hence the improvement in the pannus. The operation itself causes a local blood letting and brings an increased supply to the part. Such suggestions, however, are hardly a sufficient explanation.

After the operation the fornix is drawn forward and the lid is not so easily everted as previously. Eversion can still be performed however with the aid of a glass rod. There is no interference

with the movements of the globe by reason of the advancement of the fornix.

There is no danger of ptosis following the operation as above described. On the contrary the trachomatous ptosis so often present is relieved, the lid is raised and the palpebral aperture widened. There is a tendency unless the central stitch be put in rather higher than the others for the centre of the lid margin to be drawn up in a shallow concave notch. This is undesirable from a cosmetic point of view.

The operation wound heals rapidly and the raw area quickly becomes covered with epithelium which can grow inwards from its whole circumference.

Bandages themselves tend by their pressure to invert the lids and they are therefore discarded as early as possible.

Occasionally a little knob of granulation tissue springs up on the under surface of the lid and has to be snipped off.

CROSSED QUADRANT HEMIANOPSIA

BY

DR. C. H. FELIX

THE HAGUE, HOLLAND

OF this eye disease there are only two cases known in literature. I am in a position to add a third.

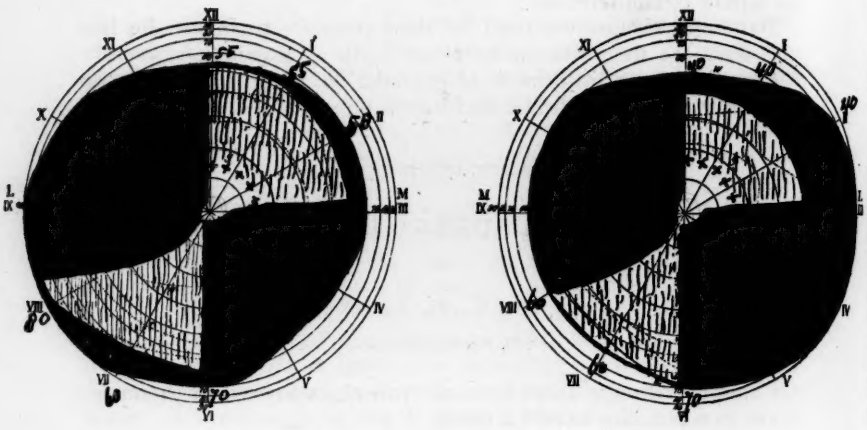
Mr. V. K., aged 63 years, is suffering from arteriosclerosis and degeneration of the heart. After reading on the evening of April 13, 1924, he retired to bed and awakened the next morning totally blind. The patient was very calm, abnormally calm under these circumstances, whilst his wife was very nervous and wanted to call the doctor immediately. The patient thought that this was not necessary. Noticing that his calmness was very strange under the situation, he answered: "Oh, I have gone through so much that this can also come."

To this very apathetic turn of mind I shall refer later. At about ten o'clock in the morning, when the family doctor visited him, the patient began to see a little again. He could not distinguish the figure of the doctor, but could observe the glistening of his eyeglasses. Gradually the situation became better and after a few days he was able to see large objects and persons as in a mist.

Bronchitis with a disorderly action of the heart kept him in bed for a long time. Not before August 2, 1924, was I able to examine

him thoroughly. The last two months the sight had much improved, but the family had observed that the sight was something peculiar. "My family don't understand anything about it," he told me on his first visit. "When an illustration is laid before me, I can't tell what it represents, but looking at a small photograph I can recognize it quite well." Reading is impossible, but writing goes better.

The vision of the left eye was 6/24 without glasses, with +1.25D. sph. 6/8; the vision of the right eye was 6/60 without correction, with +2D. sph. 6/12 (difficult). The reading of the



last lines was difficult and only possible by turning the head. In both eyes were found fine opacities of the vitreous. The discs were normal, but there was a slight tortuosity of the retinal vessels. Muscle action was normal, as was also the pupillary reaction.

Examining the visual fields we find a very rare and interesting figure, namely, a crossed quadrant hemianopsia. The left upper scotomata take not only the left upper quadrants but also rather more than one-third part of the next lower quadrants. The right lower scotomata are somewhat larger than the quadrants there. The quadrant scotomata show a sparing of the macula and are absolute. The left lower quadrants of the visual fields are colour blind. In the centre and in the right upper quadrants, which show a peripheral restriction, colours are recognized till about 15°. Outside this there is colour blindness. Twice afterwards the condition of the eyes was examined, but no change was observed.

About the middle of October the patient was subject to apoplexy with hemiplegia of the right side.

I have only found two cases of this type published: one by Groenouw in 1891 in the *Archiv für Psychiatrie,* and one by Weymann in the *American Journal of Ophthalmology.* These cases had complications not observed in my case. It is certainly remarkable that in all three cases the left upper quadrants with the right lower quadrants were blind.

Groenouw's patient had first a left hemiplegia and a left homonymous hemianopsia. Ten months later he was subject to a second apoplectic attack and a crossed quadrant hemianopsia could be observed. The scotomata were not absolute.

Weymann's patient suffered from lues and had violent continual headache. After a sudden collapse with unconsciousness a right hemiplegia appeared and, on examining the visual fields, a crossed quadrant hemianopsia was found. Scotomata were absolute. An energetic antiluetic treatment enabled the patient to resume his work after four months. The scotomata remained unchanged.

In my case the patient had only eye symptoms which make the case more remarkable. I will say a few words about these symptoms, but first I would draw attention to the abnormal calmness which my patient, whose intellect was in perfect order, retained under the terrible ordeal of becoming at once blind.

Such a state of mind at the appearance of cerebral blindness is not unknown in literature, and in the first place was brought to our notice by Redlich and Bonvicini.

These authors have also drawn our attention to another phenomenon of cerebral amaurosis, namely, that some patients are not conscious of their blindness. In some degree resembling this, as Wilbrand and Sänger write in their book, is the state of mind represented in my patient. Förster was the first who was struck by the indolence of his patient and published his observation. Later Groenouw, Probst, Reinhard and Anton have also mentioned this psychical disturbance.

I observed in the middle of October last year a second case of a sudden cerebral blindness in a gentleman, aged 68 years, who also showed this psychical disturbance. This patient, who suffered from a slight dementia senilis, called it a trifle when his wife sitting opposite him at the table and noticing that her husband suddenly looked so strange, with a deadly fright asked him what had happened.

I have put to myself the question: "Was our patient on the morning of April 14 quite amaurotic?" This cannot be said with certainty, but the possibility of a double homonymous hemianopsia with the sparing of the maculae cannot be excluded. According to Wilbrand and Sänger a sudden double-sided amaurosis, due to intracerebral bleeding, either from embolism or thrombosis of

the brain vessels should be regarded as an incomplete double-sided hemianopsia. Wilbrand and Sänger have classed the crossed quadrant hemianopsia under the "double-sided homonymous hemianopsia with symmetrical defects of the visual fields."

The symptoms of this disease can only be explained by a sudden affection of both hemispheres of the brain. In what part of the visual paths must we seek the disease? Of course behind the chiasma; therefore in the optic tract, the primary optic ganglia, the optic radiation, or cortical centre of vision.

The sparing of the macula on both sides in my case militates against the presence of the lesions in the optic tracts.

Wernicke's sign, the hemianopic reaction of the pupil, cannot throw any light; more help may be obtained from the absence of a partial atrophy of both discs.

Dufour has pointed out that the tract scotomata are seen black by the patient, while in cortical and subcortical lesions the patient is no more conscious of his visual field defect than a healthy person of his blind spot. My patient seemed to be unconscious of his scotomata.

Cortical and subcortical hemianopsia come on more suddenly, tract hemianopsia most often slowly as a result of the pressure of a tumour.

A double-sided lesion of the primary optic ganglia, near the posterior part of the internal capsule, should, I suppose, nearly always be accompanied by other symptoms in consequence of a disease of the important neighbouring parts of the brain. Also since only the optic paths are affected, I feel inclined to conclude that most likely the lesions are to be found in the cortical centres of vision or down in Gratiolet's optic radiation, and caused by a disease in one of the branches of the calcarine arteries.

I think we can determine the place more exactly if we accept the opinion of Henschen about the projection of the different parts of the visual field upon the centre of the vision. Following Henschen, the lowest visual field quadrant is localized in the upper lip of the calcarine fissure, and the upper quadrant in the lower lip.

So the foci are to be found: (1) in the left hemisphere in the upper lip of the calcarine fissure; and (2) in the right hemisphere in the lower lip of the calcarine fissure. For the right quadrant scotomata are caused by a lesion in the left hemisphere and while these scotomata are situated in the lowest part of the visual field, the lesion is to be found in the upper calcarine lip of the left centre of vision; the left quadrant scotomata are caused by a lesion in the right hemisphere, and, while these scotomata are situated in the upper part of the visual field, the lesion is to be found in the lower calcarine lip of the right centre of vision.

Finally, we will consider the question whether the double lesion is the result of a haemorrhage, embolism or thrombosis. Of course we cannot give here a positive answer. In Wilbrand and Sänger's handbook we find some differential diagnostic signs.

(*a*) The unconciousness in apoplexy is the deepest, in embolism it is present but not so deep and lasts a short time, while in thrombosis it is often absent or very superficial.

(*b*) The course of the three diseases is different. Thrombosis runs the longest course in consequence of the disease of the brain vessels, *i.e.*, headache, dizziness, decrease of memory and intellect. Apoplexy is often preceded by haemorrhages of the retina and by dizziness. Embolism occurs most suddenly and without preceding brain symptoms.

My patient never presented signs of an approaching brain-disease. It is possible that the nervousness, weariness and dullness, my patient complained of, may have had something to do with arteriosclerosis of the brain vessels. I cannot decide if there had been unconsciousness on the night of April 14. The apoplexy later on indicates disease of the brain vessels. A little haemorrhage may occur without unconsciousness, but two bleedings appearing at the same moment in the region of both calcarine arteries would be a very rare casualty.

Wilbrand and Sänger have published a case of sudden double-sided blindness from simultaneous apoplexy in both occipital lobes of the brain. The report of the autopsy, however, makes mention of many little haemorrhages not only in the occipital lobes but also in other parts of the brain.

A simpler explanation may be given here: A small thrombus, not closing the vessel, is formed just on the place where both deep cerebral arteries arise from the basilar artery. This thrombus has then been divided in two parts which are carried by the blood stream to the calcarine arteries.

Summary: we have here a case of crossed quadrant hemianopsia starting from a double-sided homonymous hemianopsia with probable sparing of the maculae in a patient who showed no other cerebral symptom. This makes my case more remarkable than the two other cases. It seems to be unique.

THE TREATMENT OF LIME BURNS OF THE CORNEA BY 10% NEUTRAL AMMONIUM TARTRATE

BY

E. WOLFF

LONDON

OF all burns of the cornea the one that is generally held to have the worst prognosis is that due to lime. For in this burn there are two factors which produce the resultant opacity. Not only does the caustic effect of the lime destroy the corneal tissue with resultant nebula, but the lime also combines with the tissues of the cornea to form particles of calcium carbonate. As time goes on this second element in the opacity tends if anything to increase. The nebula resulting from the actual burn can only be treated by surgical means—no chemical agents, as far as one is aware, have any effect on it. It is happily different with the second element in the opacity.

As far back as 1905 zur Nedden recommended the use of 10 per cent. neutral ammonium tartrate for the removal of the calcium carbonate, and published successful cases. Since then up to the time I first started its use I find no mention of it in the literature and although it is recommended in various text-books, for instance those of Fuchs and Parsons, it has remained practically unknown.*

The first case was seen at University College Hospital on February 4, 1924. The patient, H.F., a young man, aged 26 years, a plasterer by trade, had a severe burn of the cornea the result of cement containing lime entering his right eye four days before admission. He was in much pain and the eye was lacrimating freely. There was much ciliary and conjunctival injection. The cornea stained with fluorescine almost over the whole of its extent and was typically cloudy in appearance. On examining it with a loupe the characteristic white spots of calcium carbonate could be seen.

The eye was cocainized for ten minutes with 4 per cent. cocain (for the drug is at first far too painful without this preliminary treatment) and freshly prepared 10 per cent. neutral ammonium

*I have just, however, received a reprint of an article on the same subject with similar results by Drs. O. and H. Barkan, of San Francisco, *Jl. of Amer. Med. Assoc.*, Vol. LXXXIII, pp. 1567-1569, Nov., 1924. They give the following references :—

1. **Guillery.**—Ueber die Kalktrübung der Hornhaut und Verfahren zu ihrer Aufhellung. *Arch. f. Augenheilk.*, Feb., 1902.
2. **zur Nedden.**—Ueber Aufhellung von Blei und Kalk Trübungen der Hornhaut. Heidelberg Congress, p. 216, 1905.
3. **Fuchs, E.**—Bericht ueber die 32te Verzammlung der Ophthalmologischen Gesellschaft. Discussion, p. 225. Heidelberg, 1905.

tartrate slowly instilled with an undine for about fifteen minutes. Ung. atrop. 1 per cent. was put in and the eye tied up. The bathing was done daily. The pain and lacrimation soon disappeared and after ten days the solution could be instilled without cocain which is only necessary while the eye is red.

The little particles of calcium carbonate could be seen to be gradually getting less, and his vision from counting fingers, after six weeks was 6/6 with his correction of -1D. sph. and -0.5 cyl. There are still, however, peripheral nebulae which most probably are due to the direct action of the burn and will therefore not respond to treatment.

The second case was seen in April, 1924. This patient had had treatment for one month before admission. There was much opacity of the cornea and the little white particles were there as before. His vision was 6/60. After two months treatment with the tartrate solution it was brought to 6/12. This man also showed the peculiarity noted in several of the cases that although he was under atropin all the time and there were no synechiae, his pupil would not dilate freely.

These two cases show what results may be achieved in early and late cases, and very probably as zur Nedden says the opacities may be improved years after the injury.

I asked Mr. Hampshire, Pharmacist to University College Hospital to try the effect of 10 per cent. neutral ammonium tartrate on calcium carbonate *in vitro*. He kindly did this and writes as follows:

"The action of 10 per cent. ammonium tartrate in the treatment of lime burns of the cornea seems to be simply a conversion of the insoluble calcium carbonate into the slightly more soluble calcium tartrate, which is washed away.

$$CaCO_3 + (NH_4)_2\,C_4H_4O_6 = CaC_4H_4O_6 + (NH_4)_2\,CO_3.$$

This reaction takes place slowly, hence the need for the prolonged treatment. I put some calcium carbonate into a 10 per cent. solution of ammonium tartrate and after a few days, found that the insoluble powder had been replaced by crystals of calcium tartrate which of course, could have been dissolved up by adding more water."

I have seen several cases since both at University College Hospital and at Moorfields, the result of treatment being uniformly good, and Mr. Humphrey, House Surgeon at the latter hospital, tells me that the tartrate is now used as a routine.

My thanks are due to Sir John Parsons, under whose care the cases I have described were, for allowing me in the first instance to try the solution and secondly to publish the results of the treatment.

KRUKENBERG'S SPINDLES

BY

J. D. M. CARDELL, M.B., F.R.C.S.

LONDON

Description of a Case

This example of the condition occurred in a single woman, aged 30 years, with no family history of myopia, and no history of any previous inflammation of the eyes. Her corneae presented vertical spindle-shaped opacities, seen faintly on observing the red reflex, occupying an area of about 1.5×3 mm. in each eye, and situated below the horizontal meridian. On examination with the loupe, the opacities were found to be caused by a brown pigmentation in the corneae.

The pupils reacted normally to light, the irides were of a grey colour showing no signs of past or present inflammation, and no signs of a persistent pupillary membrane. There were no gross changes in the right fundus, but the left eye, which was the more highly myopic, showed an area of choroidal atrophy to the outer side of the disc. The vision of the right eye was J. 1 and less than 6/60, in the left J. 20 and less than 6/60, the refraction of the former being -10D. sph., and of the latter -20D. sph.

Miss Mann examined the case with the slit-lamp, and described the pigment as being almost on Descemet's membrane but on an anterior plane, and composed of a multitude of closely set rings with clear centres.

Historical

There have been about 21 cases of this condition described since 1899 when Krukenberg reported his first case. Vogt recently was able to collect some four cases for a clinical demonstration at Munich. A very complete review of the condition by T. B. Holloway appeared in the "Annals of Ophthalmology" of 1920, whence a large amount of the information given below was obtained.

Classifications of the Characters of Ten Cases

(1) *The distribution of the pigment*: Bilaterally symmetrical ovals (except one case) in the deeper layers of the cornea, the long axes being vertical (except in one case where they were horizontal), the appearance being granular.

(2) *The size of the spindles*: from 2.5×1 to 4.25×3.25 mm.

(3) *The colour of the pigment*: from golden brown to chocolate.

(4) *The colour of the iris*: brown in five, grey in five.

(5) *Associated lesions*: congenital in two, acquired in two.
(6) *Refraction*: myopic in eight (in three of a high degree) hypermetropic in two.
(7) *Vision*: as good as if there had been no pigment.
(8) *Sex*: female in eight, male in two.
(9) *Age when first observed*: 22 to 45 in eight, over 60 in two.
(10) *Progress of the condition*: those cases that were seen after a lapse of years showed no advance or retrogression.

Aetiology

There is some difference of opinion as to whether the condition is congenital or acquired.

(1) *Congenital.*—This view is favoured by Thomson and Ballantyne, who adduce the following arguments in its support:

(1) Perfect symmetry.
(2) Pigment spots of the same size.
(3) Pigment is interstitial and not on either surface of the cornea.
(4) No past history or indication of inflammation.
(5) The eyes are myopic.

(2) *Acquired.*—Krukenberg and Stock regarded the condition as being on the posterior surface of the cornea and derived from the pigment of a persistent pupillary membrane, which, once attached to the posterior surface of the cornea, had left this indication of its attachment. Vogt also considers the condition to be acquired.

Cases of Persistent Pupillary Membrane with adherence to the Cornea

Of 20 recorded cases, 12 were attributed to imperfect division of mesoblast, and 8 to keratitis with or without perforation. In some, fibres were observed running from the corneal opacity to the circulus iridis minor, in others, the corneal ends of the strands were unattached, and it was these latter cases that were thought to mark an intermediary stage between an attached pupillary membrane and Krukenberg's spindles. It is difficult, however, to understand why, in the latter condition, there are no signs of a persistent pupillary membrane, and why the pigment should be so uniformly and symmetrically distributed in a vertical spindle-shaped area.

Acquired Pigmentation in Pseudo-sclerosis and Wilson's Disease

These two diseases are known collectively as hepato-lenticular degeneration, and cases of them show the Kayser-Fleischer ring.

When focal light is thrown through the ring on to the iris, a golden glow is imparted to that structure as if it were illuminated by the setting sun. Examined with the slit-lamp the pigmentation is seen to be granular in the deepest layers of the cornea, brown peripherally, gradually becoming yellow and fading towards the centre. The endothelial cells of the cornea are normal and the Hassel-Henle "craters" are present and normal.

Microscopical sections show the pigment to be in Descemet's membrane, immediately under the cubical endothelium, beginning at a little distance from the angle of the anterior chamber, where the limit of the pigmentation is sharply defined, and thence fading towards the centre of the cornea.

The pigment is disposed in granules of a very dense black-brown colour, finer than the pigment granules of the retinal pigment layer. It is uniformly distributed under the endothelium and does not always occupy the entire thickness of Descemet's membrane. Thus outside the pigment there is at times a thin clear zone.

The chemical composition of the pigment is a matter of discussion, the various suggestions including silver, melanin, and bilirubin; however one fact stands out, and that is that the reaction for iron is not present.

My thanks are due to Mr. Hudson for allowing me to describe the case, and to Miss Mann for her great assistance in the slit-lamp examination. The sources from which the above information was obtained are given in the bibliography.

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SPONTANEOUS ABSORPTION OF MATURE SENILE CATARACT

BY

A. J. BALLANTYNE

GLASGOW

THE following case illustrates a form a spontaneous cure of cataract which is new in my experience and may be of interest to others.

The patient, a lady about 65 years of age, had a mature cataract removed from her left eye 13 years ago by the late Dr. Cluckie of Paisley. She states that at that time the right eye was already affected, and that it became progressively dimmer, until three or four years ago when she consulted Dr. T. S. Barrie of Glasgow, and was told that she had now a mature cataract in the right eye. She has had no treatment since that date, but the vision of the right eye has gradually returned, and about two months ago she began to see double.

On examination I found that the left eye was aphakic, the pupil a little drawn towards the nasal side (a simple extraction having been performed), the media were clear and the fundus normal. Vision in the left eye with +9D.sph. ○ +3.5D.cyl. axis 180°=5/6. Ophthalmoscopic examination in the right eye (which was slightly divergent) detected a little fine dust-like opacity in or behind the pupil. The fundus could be fairly clearly seen, and the refraction was highly hypermetropic. Vision in the right eye with +11D. sph. ○ +0.5D. cyl., axis 180°=5/12. The result of the subjective test and of the ophthalmoscopic examination gave me the impression that the lens of the right eye was for some reason absent, but examination with the slit-lamp revealed a somewhat unexpected

condition. The lens was found to be present, its anterior surface being sprinkled with numerous fine white spots, some of them glistening almost like cholesterin crystals, and with the narrow beam it was found that this was the only lens opacity present, the rest of the lens having a uniform degree of relucency without the usual zones of discontinuity. The anterior face of the lens instead of being convex was flat, and it was further back from the plane of the iris than in the normal eye. The posterior surface of the lens had apparently its normal curve, the net result being that the lens seemed to have lost about one-third of its antero-posterior thickness.

The vitreous contained the usual lace-like membranes, and a distinct dark interval intervened between the posterior surface of the lens and a definite membrane, which one might describe as the hyaloid membrane.

The only explanation I can suggest for what has occurred in this case is that the opacity in the lens of the right eye was entirely confined to the anterior cortex, and that the opaque lens matter underwent absorption. This would account for the flattening and recession of the anterior surface of the lens, and the absence of any apparent change in the other parts of the lens.

Dr. Barrie, with whom I discussed the case, kindly consulted his notes, and was able to confirm the patient's statement that at the date when he saw her she had a mature cataract in the right eye. Although operation had been proposed nothing was done.

A CASE OF SEPTIC FOCUS IN THE RETINA OF AN APPARENTLY HEALTHY BOY AGED 15 YEARS

BY

K. WALLER TODD

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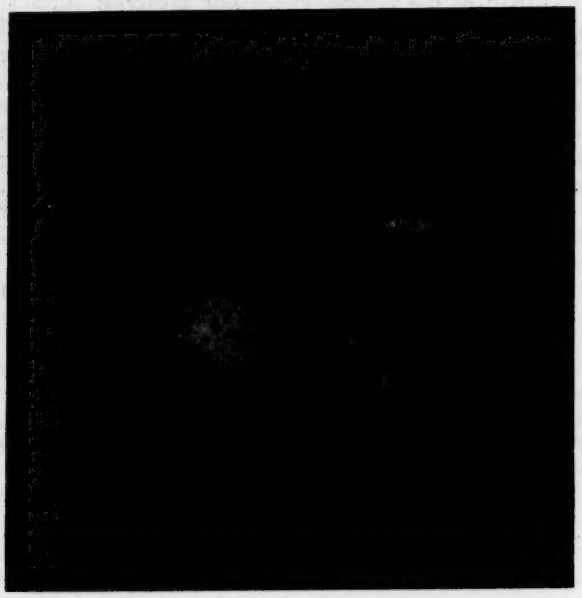
ON August 27, 1924, W. W., a somewhat obese Hebrew boy, aged 15 years, attended the Out-Patient Department for loss of vision of the right eye; this he had first noticed on waking the same morning. He was admitted for observation under Mr. Charles Goulden, who has kindly given permission for the case to be published.

Routine examination revealed vision reduced to ability to count fingers at three feet distance, and nothing abnormal in the media. The fundus picture is shown in the accompanying painting by Messrs. Theodore Hamblin, to whom I am indebted for the favour of a black and white print for publication. The painting

was made on the 28th, the picture not having materially changed in twenty-four hours. The congestion of the veins was even more evident than is represented. It is of considerable interest in view of the literature on the subject that the condition was mistaken for thrombosis of the central vein. Absence of peripheral haemorrhages is strongly against this diagnosis. It may further be



remarked that the youngest case of primary thrombosis found in the literature by Foster Moore[4] was aged 30 years.

No cause was found for the condition. A history has since been obtained that the boy had had a cold in the head, associated with some headache, during the week previous to admission. An exhaustive clinical examination revealed no septic focus. The deep reflexes in the upper extremities were normal: those in the lower limbs were not elicited, even with "reinforcement," whilst the patient was resting in bed, but later, when he was up and taking exercise, were definitely exaggerated, especially the knee jerks. The Wassermann reaction of the blood was negative (one examination).

The vision underwent a slight improvement in the course of ten days, when he saw 6/60 once. When his fundus was last

examined, in October, secondary optic atrophy was commencing. The tension had remained normal. The patient has now left the district, but when last heard of, in April 1925, had had no painful complications.

Cases in the literature where septic foci in the retina have been traced to disease of the nasal sinuses are, of course, very numerous and there is little to be added to Eversbusch's[2] Monograph, 1903. Fish[3] follows Zeim[6] in associating all cases with venous stasis and thrombosis. Most of Fish's cases had extreme trigeminal pain, whereas the case above reported complained of no pain. Many cases, as for instance that published in 1911 by Hett and Henderson[5] were similar to the above in that no cause could be found on examination.

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DIPLOPIA LAMP

DESIGNED BY

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THE method of testing diplopia with a candle flame has several disadvantages. The size of the flame is too small to allow the patient to describe accurately any tilting of the images that may be present. The candle flame illuminates surrounding objects and distracts the patient's attention. The flame moreover is constantly moving in air currents, making it still more difficult for the patient to describe what he sees.

It is often a matter of great difficulty for the surgeon to interpret the patient's description of the double images.

The diplopia lamp has been designed to eliminate the disadvantages of the candle flame, and also to provide the patient with a means with which he can demonstrate to the surgeon the exact position and relation of the true and false image.

The dimensions of the lamp are 4 inches × 3½ inches × 3½ inches. It consists of a small case containing an ordinary pocket lamp battery. Attached to the front of the case is an enclosed metal reflector, the aperture of which is covered with an opal glass. In front of the opal glass is a metal disc which contains a slit measuring ½ inch × 2½ inches. When the electric current is turned on an evenly illuminated area the size of the slit is obtained. In a darkened room nothing is visible except the illuminated area, the lamp casting no light on surrounding objects.

The metal case of the lamp, in addition to the electric battery, contains a circular red glass for placing before the patient's eye, and also two strips of glass, one red, and the other white. The size of these strips is similar to the illuminated area of the lamp. The patient, during the examination, holds the two strips of glass, and is requested to place them in positions corresponding to the images that he sees.

The method has been tried on a number of patients with most satisfactory results. The patient is enabled to demonstrate to the surgeon the actual distance that he sees the images apart, and tilting of the images can be most accurately shown. The lamp is supplied by J. Fordham, Manufacturing Optician, Wallasey, Cheshire.

ANNOTATION

The Education of Myopic Children

We note with satisfaction that the report of the Council of British Ophthalmologists on the education of myopic children, which was published in the January number of this journal, has been commented upon favourably by a number of different periodical publications in various parts of the country.

The *Morning Post* was stimulated by it to send a representative to visit one of the myope schools in Islington, and to give its readers an account of the way in which the children's education is there carried out.

The *Lancet* not only published the report in full but also discussed it in an editorial annotation, advising that it should be studied by all educational authorities.

The *Medical Officer*, a journal for the medical men in the Government and municipal services, says: "It is not often that there comes to hand such a creditable report as that recently issued by the Council of British Ophthalmologists; it is brief, it is balanced,

it is written by men who are expert in their branch of medicine, and it concerns a most important subject." Its recommendations are, the journal says, very urgent, and it hopes "that this admirable report will be followed by the necessary action which would benefit so many sorely handicapped children."

The *Glasgow Herald* in its remarks says: "The chief difficulties in the way of giving education to short-sighted children are the need for having the classes small in number, and the special training required for the teachers. These two facts taken together entail it is needless to say, a considerable financial outlay and the present is not a time when that can be lightly undertaken." The *Lancet* also comments on the extra expenditure which the Council's recommendations would entail, and the difficulties of the present time when the outcry in all Government Departments is for economy. Surely, however, it cannot be regarded as an economical policy for a State to carry on a form of compulsory education which tends to lower the standard of vision in its future workers, and in some instances produces inmates for its blind asylums.

ABSTRACTS

I.—DISEASE OF THE UVEA

(1) **Fuchs, A.—On the propagation of sympathetic disease in the optic nerve. (Ueber die Fortleitung der sympathisierenden Entzündung in den Sehnerven.)** *Zeitschr. f. Augenheilk.*, Bd. LVI, H. 5-6, ss. 275-301, October., 1924.

(1) **Fuchs** has demonstrated histological lesions in the optic nerve in cases of sympathetic ophthalmitis, granulomatous in nature, which he considers specific to the disease, and which are of such a nature as to suggest that the method of propagation from one eye to the other is by direct spread of a virus along the nerve. He has studied in all 101 cases of sympathetic ophthalmitis; in 30 cases the optic nerve was not sectioned, in the remaining 71 it was examined histologically. Of these, in 17 the optic nerve and papilla were normal, although the characteristic epithelioid cell infiltration was present in varying degrees of intensity. In all the remaining 54, there were changes in the nerve; in 24 there were definite lesions on the nerve trunk, especially marked in the pia, in 4 nodules of some size in the substance of the nerve. The favourite site of the lesion is the pia and its immediate vicinity,

some distance, averaging 14 mm., behind the eye; it does not extend up to the lamina cribrosa. The arachnoid is always free and unaffected. The lesion may well be so pronounced as to be readily visible to the naked eye as a bluish speck, but it never exceeds a diameter of more than 1 mm. to 2 mm. The pathological anatomy is that of a perineuritis or optic neuritis; the infiltration is largely lymphocytic; it infiltrates the pia, separating out its lamellae, and is frequently related to a similar infiltration in the periphery of the nerve trunk itself, arranged especially in association with the peripheral blood-vessels. Much more rarely discrete nodules occur in the substance of the nerve. These also are made up of lymphoid and epithelioid cells, and are always closely associated with the corresponding lesion in the pia, and with a similar infiltration of the uveal tract and sclera.

Fuchs considers that this infiltration of the pia with lymphocytes and epithelioid cells which is associated fairly frequently with a similar interstitial infiltration in the peripheral region of the trunk of the nerve, and more rarely with definite discrete nodules of the same character and in the same region, and associated always with a similar infiltration in the uveal tract, and which occurs some little distance behind the globe and is independent of the condition of the disc, is pathognomonic of sympathetic disease. He enumerates four conditions where a somewhat similar inflammatory infiltration occurs in the optic nerve, all of which have characteristics which distinguish them adequately from the lesion of sympathetic ophthalmitis.

Infective Endophthalmitis.—This is found always in association with a papillitis, and varies with it in severity: only when the disc is pathological is the nerve pathological. The severity of the lesion in the nerve is greatest immediately behind the disc, and gradually diminishes as the distance from the eye increases. The central part of the nerve is the most severely implicated—not the periphery.

Panophthalmitis.—Infiltration occurs only at a late stage, and only in the region of the disc.

Atrophia Bulbi.—Infiltration of the nerve with lymphocytes occurs rarely and only when the abscess is in the posterior part of the vitreous; then the lesion is immediately behind the disc. In old cases the nerve is free from inflammatory lesions.

Iritis Serosa.—When the retina is implicated and infiltrated with plasma cells, sometimes the optic nerve shares the infiltration. Such, however, is confined to the immediate neighbourhood of the disc, and again affects primarily the central part of the nerve trunk rather than the periphery.

W. S. DUKE-ELDER.

(2) **Jaeger, E. (Tübingen).—A contribution to the symptomatology of sympathetic ophthalmitis. (Beiträge zur Kasuistik der sympathischen Ophthalmie.)** *Klin. Monatsbl. f. Augenheilk.*, November and December, 1924.

(2) **Jaeger** remarks that in spite of all that has been done to elucidate the mystery of sympathetic ophthalmitis we are still in ignorance of its cause. Even the diagnosis is difficult, for bacteriology gives us no help and the histological examination is often of doubtful value. The treatment is purely empirical in nature. In the paper under review he has collected and analyzed all the cases that have occurred in the Tübingen Clinic, and the cases published between the years 1876 and 1923. The conclusions confirm the criteria laid down by Schirmer: the diagnosis of sympathetic ophthalmitis cannot be made with absolute certainty since symptoms identical with those found in the sympathizing eye can be due to varied causes. The diagnosis will, however, be the more likely the nearer the case fulfils the following conditions:

(*a*) There must be a uveal inflammation in the exciting eye caused by exogenous infection.

(*b*) The time interval between the inflammation of both eyes must be at least fifteen days, but may be much longer.

(*c*) The sympathizing eye must suffer from uveal inflammation.

(*d*) Careful examination of the whole body must not discover any other cause for the inflammation.

Seventy cases of sympathetic ophthalmitis which were treated at Tübingen, for present purposes have been divided into three groups. In the first we have cases in which the exciting eye was not excised. The second contains cases in which the exciting eye was removed after the onset of the sympathetic ophthalmitis, and the third instances of prophylactic excision.

GROUP 1.—Contains fourteen cases in which both eyes ultimately became blind. Five of these were extractions of cataract. There were four cases in which the exciting eye became blind but the excited eye retained useful vision (5/8, 5/5, 5/10, 5/8). Only the last was an operation case (cataract extraction). In one case only did both eyes recover. Three of the favourable cases showed choroiditis and papillo-retinitis, but this was seen once only in the examples that ended in blindness. Secondary operations were found only in the severe group and these were tolerated badly, especially by the excited eye. It is interesting to note that among nineteen cases in which the exciting eye was not removed 14 (70 per cent.) became blind in each eye, four retained sight in the excited eye, and one in both.

GROUP 2.—Twenty-three cases retained useful acuity (in 16, 6/12 or better), and the average time between the onset of

sympathetic inflammation and enucleation of the exciting eye was 15 days. In sixteen the eye became blind. Here the average time between the commencement of the sympathetic ophthalmitis and the removal of the injured eye was 67 days.

Comparing the two groups we find that when the exciting eye was retained 70 per cent. of the cases became totally blind, whereas when the exciting eye was excised only 40 per cent. became blind, and also that the longer the injured eye was retained the worse was the final result. These results are supported by a study of 383 published examples of sympathetic ophthalmitis following operations. These confirm the opinion gained from the Tübingen cases that the worst forms of the disease follow operations and especially extractions of cataract. Those few cases in which the sympathizing eye was so severely attacked that it had to be removed are of great interest. Only 10 cases could be discovered in the literature and three more were seen at Tübingen. Eleven followed extraction of cataract. Even those cases which first started after the prophylactic excision of an eye which had become inflamed after extraction, in the main ended unfavourably. The value of early excision is absolutely confirmed by these 383 published cases. Special consideration was given to examples of sympathetic ophthalmitis starting after prophylactic enucleation of the injured eye. The much disputed question as to how long after the removal of an injured eye an inflammation in the fellow eye can be regarded as sympathetic in nature is still unsettled. The most important criterion is the histological picture of the enucleated eye. Although the differences between what we may call a dangerous type of eye and the real sympathetic inflammation may be small, and may be confused by mixed types of cell infiltration, yet the microscopic appearances described by Axenfeld, Uhr, Fuchs, and we may add by Henderson in this country, must be regarded as typical of sympathetic ophthalmitis.

Jaeger agrees with Schick who gives fourteen days as the longest time that can elapse between the removal of the exciting eye and the outbreak of sympathetic inflammation in the fellow eye. He says that he pays no attention whatever to the cases cited by the English Committee in 1886 because there was no sharp differentiation between eyes that had been actually removed and those eviscerated, for he says: "the word *excision* which is exclusively employed might apply to both operations"! We think that the author would be well advised to inquire what English ophthalmic surgeons imply by the terms they use before making such a wholesale condemnation of a very useful investigation. It is certainly news to us that "excision" is ever used by English-speaking surgeons to describe evisceration. The cases published in the literature in which sympathetic ophthalmitis appeared at a later

date than fifteen days after enucleation of the exciting eye are carefully analyzed, and the author comes to the conclusion that either the inflammation had been present before it was actually detected or that it was due to causes other than sympathetic. We have critically studied these cases and we are bound to agree that Jaeger has to a large extent proved his point. In many cases there was no examination of the excised eye, or the typical Fuchs infiltration with epithelioid cells was not present, and in others the type of inflammation and its clinical history were not that of true sympathetic ophthalmitis. In other cases there was a strong suspicion amounting to probability that the inflammation had been present for a longer time than that recorded.

The conclusions of the research are the following:

(1) Eyes in which the exciting inflammation follows an operation upon the globe and especially cataract extraction, give rise to a very severe type of inflammation in the second eye, one which in general ends very unfavourably. Sympathetic ophthalmitis does not often follow simple iridectomy, and when it does is often of a mild type.

(2) Sympathetic inflammation which manifests itself essentially as a chorio-retinitis and retino-papillitis, that is to say, affects principally the posterior half of the eye, is in general milder than the irido-cyclitic type.

(3) The excited eye is extraordinarily sensitive to any form of operation, and such are generally followed by severe and mostly fatal relapses. The exciting eye on the contrary tolerates secondary operations well.

(4) Removal of the exciting eye, even after the outbreak of sympathetic ophthalmitis in the second eye, has, in an overwhelming majority of cases, a most definitely favourable influence upon the inflammation, and the sooner the injured eye is removed the better the result will be as regards final visual acuity.

(5) It is highly probable that fifteen days is the latest date for the outbreak of real sympathetic inflammation.

T. HARRISON BUTLER.

(3) **Truc, H., and Dejean, Ch. (Montpellier). — Sympathetic ophthalmitis consecutive to extraction of cataract. (Ophtalmie sympathique consécutive a l'extraction de la cataracte.)** *Arch. d'Ophtal.*, July, 1925.

(3) This paper is a record of three cases of sympathetic ophthalmitis arising after uncomplicated operations. The patients were females, aged 65, 73, 72 years; in all, the combined operation was performed. The value of the paper lies in the very thorough examination, macroscopic and microscopic of the exciting eye of

one of the patients, illustrated by good micro-photographs. Inflammatory changes of the well-known type were present in all the tissues of the eyeball with the exception of the retina and optic nerve, which were essentially normal.

J. B. LAWFORD.

(4) **Woods, Alan C., M.D. (Baltimore).—Uveitis: its diagnosis, aetiology, and treatment, an illustrative case.** *Amer. Jl. of Ophthal.*, September, 1925.

(4) **Woods'** case occurred in a woman, aged 59 years, suffering from diabetes. Vision of the right eye had been reduced to perception of light with poor projection as a result of old iritis and cataract, and the left eye showed a violent diabetic irido-cyclitis. Insulin and dieting were of no avail, attempts to dilate the pupil caused glaucoma, and local treatment with heat, dionin, etc., was unsuccessful. The condition became critical, it was decided to try non-specific protein therapy and 25 million killed typhoid bacilli were therefore given intravenously. Four hours later temperature rose to 101° and there was a leucocytosis, which disappeared next day, when the eye was found to be quieter and vision clearer. Four days later 50 million killed typhoid bacilli were given intravenously and within twenty-four hours the eye had greatly improved. It was now possible to dilate the pupil without causing rise of tension and the improvement was maintained. Vision eventually came up to 20/30 with glasses.

F. A. WILLIAMSON-NOBLE.

(5) **Knapp, Dr. Arnold (New York).—Intradermal test with uveal pigment in traumatic irido-cyclitis.** *Arch. of Ophthal.*, May, 1925.

(5) **Knapp's** investigation forms an interesting application of the discoveries of Alan Woods. The latter found that after injuries to the uveal tract there developed, in the serum of these cases, a complement fixation reaction to an antigen made from uveal pigment. This reaction was positive when normal healing in the first eye took place and negative when healing was delayed, and sympathetic disturbance in the second eye sometimes occurred. The clinical value of such a test is obvious, but the practical difficulty is in the performance of the complement fixation test which is of a complex nature. Woods has therefore suggested the performance of an intradermal test, the technique being as follows: The pigment of a cow's uveal tract is suspended in 7.5 c.c. of saline and two dilutions are made: 1 in 10 and 1 in 50. Small intradermal injections are made with each of these solutions on the flexor surface of the forearm and a fourth control injection

of 0.15 per cent. tricresol in saline is also made. A positive reaction consists in the development of an erythematous area sometimes with a central bleb. This comes on within an hour and lasts for a number of hours. In a negative reaction, there is no redness or swelling. Twelve cases of traumatic irido-cyclitis were tested. Four were positive and two of these developed sympathetic ophthalmitis. Eight were negative, and in seven the second eye remained normal. In one, however, a typical sympathetic irido-cyclitis developed. In case the pigment used might have been too old, a fresh supply was obtained but the second test was also completely negative. Knapp does not offer an explanation of this anomalous case but suggests that the subject warrants further study.

F. A. WILLIAMSON-NOBLE.

(6) **von der Heydt, Robert (Chicago, Illinois).—Collateral manifestations of uveitis.** *Amer. Jl. of Ophthal.*, May, 1925.

(6) **von der Heydt's** paper brings forward the various collateral manifestations which may appear during an attack of uveitis. Most of these are of course well known, but it is useful to have them all grouped together. Thus, fluctuations of intra-ocular tension are common, hypotony causing the formation of folds in Descemet's membrane, which tend to persist for some time even in the presence of raised tension and consequent oedema of the corneal epithelium. Should the uveitis be extreme in intensity and prolonged in duration, keratitis with deep vascularization of the cornea may occur. Neuro-retinitis is quite common, and may cause central scotomata, as described by Miller. Zeeman has proved in tuberculous cases, by microscopic examination, that the toxins first involved the retina at the ora serrata, then passed along the smaller to the larger vessels, eventually reaching the nerve head and causing a lesion there. It is also accepted that toxins may pass along the lymph spaces of the vitreous.

F. A. WILLIAMSON-NOBLE.

II.—THERAPEUTICS

(1) **Corbett, J. J., M.D.—Radium therapy in non-malignant eye conditions.** *Medical Review of Reviews*, New York, July, 1925.

(1) In an endeavour to find out what radium will do in certain eye conditions, and how best it can be done, 141 cases, comprising various lesions, were treated in the Radium Clinic of the Boston City Hospital from August, 1921 to August, 1923.

It was found that in no class of case was radium uniformly and consistently successful in producing a definite result. At the same time it gave very satisfactory results in several cases. Contrary perhaps to usual belief it did not appear that radium was helpful in xanthelasma. In chronic blepharitis the results were very variable, and of little value in pterygium. In corneal opacities it was found that however dense the scar, a decided improvement came about with treatment, but this was often long and difficult of application outside a hospital clinic. In vernal catarrh the results were sometimes spectacular; in others the treatment was long drawn out before any result could be seen.

In cataract it produced sufficient result in early opacities—both clearing these and improving vision—to make it clear that the improvement was not spontaneous. In more advanced cases no effect could be made on the opacity. The most interesting results came from radiation in five cases of glaucoma where the tension was measurably reduced and vision improved. It is suggested as an aid to miotic treatment prior to, or where necessary, in place of, operation. Many changes of dosage and type of radiation were used to try to determine a consistent line of treatment in any particular eye condition, and, while this perhaps did not appear to be effected, the work accomplished enough to warrant an effort in the use of radium to bring out its possibilities.

R. C. DAVENPORT.

(2) **Castra de la Jara, R., and Castresana, A.—Radium in trachoma. (Tratamiento del tracoma por el radio.)** *Arch. de Oftal.*, Vol. XXV, p. 417, Aug., 1925.

(2) **Castra de la Jara** and **Castresana** review the bewildering number of remedies advanced from time to time in the treatment of trachoma. They have resuscitated the somewhat discredited treatment by radium, and believe that with it they have obtained beneficial results of clinical interest and importance.

A preliminary report—admittedly premature— embodying nine cases so treated is given. The dosage used is the equivalent of 10 mgr. of the sulphate salt applied in an initial exposure of five minutes working up to ten minutes, repeated at five-day intervals. Twenty-four hours after the first exposure a reactionary hyperaemia occurs, disappearing largely in 48 hours, which reaction becomes less marked with successive treatments. The immediate end-result is a definite ischaemia of the conjunctiva, with a diminution in size of the granulations and follicles. No long end-results are yet given.

W. S. DUKE-ELDER.

(3) **Lane (Minneapolis) and others. Radium in ophthalmology.** *Jl. of Amer. Med. Assoc.*, December 6, 1924.

(3) A communication on this subject was read before the Section of Ophthalmology of the American Medical Association, 1924, by **Lane** (Minneapolis) of a somewhat academic nature. There was a very interesting discussion.

Edward Jackson (Denver) said: "It was right that the discovery of physical agencies such as the Roentgen ray and radium should be quickly followed by their trial as remedies for all sorts of pathologic conditions. Such trial reveals their dangers, their failure to fulfil some of the hopes that have been entertained regarding them, and their real usefulness in therapeutics.

The radiations that proceed from radium, like the Roentgen ray, seem to have the greatest influence on cells that are relatively undifferentiated, in which the vital force has been and is being expended in the direction of rapid multiplication, rather than toward high differentiation and permanent maintenance of characters. In the eye, the most highly differentiated epiblastic cells of the lens or retina and the mature tissues of mesoblastic origin are relatively unaffected, while the rapidly developing and multiplying cells of an epithelioma or sarcoma are killed or greatly damaged by the same exposure. As with so many other most valuable of therapeutic agents, the large dose kills, while the small dose stimulates or produces the more delicate modification of nutrition that was desired. The killing of cells at the centre of radioactivity, desired in the treatment of malignant tumours, may be followed by more rapid development of similar cells, that have escaped in a more peripheral zone, and receive only a comparatively small dose. The difficulty and importance of destroying all the outlying cell colonies of a cancer are just as evident in using radium as in treating cancer with the knife. Its advantage is in its power to search these out and destroy them by its selective action, while the normal, highly specialized cells, among which the cancer cells are located, are relatively immune.

From a survey of the field, we may learn in what directions and by what paths of experiment in the laboratory or in the dosage, and to what particular problems in therapeutics, our trials with radium may be directed wisely."

Sandford Withers (Denver) said: "The present acceptance of the physical agents radium and Roentgen ray in ophthalmologic practice is particularly apparent. It is unfortunate that the mass of literature on the radiation therapy of lesions of the eye has been published in journals dealing with radiology and has, therefore, not been properly called to the attention of the ophthalmologist. A complete review and bibliography of the use of radium in ophthalmology has recently been made and will appear

shortly in the *American Journal of Ophthalmology*. It is essential that we familiarize ourselves with the histologic characteristics of cells and tissues which determine the degree of radiosusceptibility or resistance, in order that we may know fairly well, on *a priori* grounds, whether a given lesion will or will not retrogress favourably under irradiation. In general, the more rapid the growth and embryonal the type of cell and the greater vascularity and absence of stroma, the greater is the radiosensibility of cell and tissue. It is evident, therefore, that the highly specialized non-vascular nature of the normal tissues of the eye makes these structures particularly resistant to irradiation, so that little or no damage should be done in giving intensive irradiation for malignancies about the eye. In dealing with malignancies, I want to urge that the patients come first for irradiation, rather than as a last resort, and that irradiation be considered as radical and rational a procedure as surgical ablation."

Derby (Boston) said: "It was my duty recently to review the work that had been done in the use of radium and Roentgen ray in non-malignant diseases of the eye. Assisted by Dr. J. H. Waite, I went over the literature for the last fifteen years, and, as the conclusions I came to differ from those of Dr. Lane, it may not be out of place to refer to them here. I can endorse Dr. Lane in saying that most articles are sadly lacking in details as to the dosage, screening, length of time between treatments and their duration; also as to whether the element or emanation was used. We came to the conclusion that radium treatment is valuable in non-malignant disease only in very limited groups of cases: first, in the various types of angioma that occur in the region of the eye, it seems to be of very considerable value; second, in xanthelasma; third, in vernal conjunctivitis.

The pathologic changes occurring in early trachoma would seem to be a fertile field for the use of this agent. Unfortunately conclusive evidence is still lacking that radium is of benefit, perhaps owing to the fact that trachoma is due to some infecting organism, and up to date, I believe, it has not been possible to kill such organisms when deep in the tissue without causing necrosis of normal tissue. I believe, however, that further careful work on trachoma is desirable."

Melville Black (Denver) said: "The term trachoma has been used rather loosely. There are many stages. The question is whether radium will be of value in the early stages, or whether its application will be of service in the later stages. It is the old trachoma, with its hard, blue, cicatricial palpebral conjunctiva with recurring attacks of keratitis, and ulceration of the cornea, that comes to us year after year, and we try everything in the whole category in order to give these patients relief. The only

thing that has ever given me satisfaction in these cases has been excision of the tarsus."

Black's remarks are very much to the point. It is hard to believe that any treatment can very greatly improve old trachoma in which the normal tissue of the conjunctiva, tarsus, and cornea have been replaced by cicatricial tissue. But in the earliest stage of the disease, with small pin-head follicles, it is possible that radium may prove to be of real service, though it is doubtful if it will be usefully applicable in large trachoma clinics.

A. F. MACCALLAN.

(4) **Withers, Sandford (Denver, Colo.)—Value of radiation therapy in ophthalmology.** *Amer. Jl. of Ophthal.*, July, 1924.

(4) **Withers** states that there are five general structural characters which determine susceptibility to radiation. They are:

(1) Undifferentiated form of cells.
(2) Rapid growth with abundance of mitoses.
(3) Large hyperchromatic nuclei.
(4) Vascularity, especially when due to an abundance of thin-wall capillaries.
(5) Absence of stroma or intercellular substance.

On the other hand, differentiated cells with little chromatin in the nuclei, growing slowly with few mitoses and well-formed vessels, are relatively unsusceptible. Bearing these factors in mind, the following conditions appear to be those in which treatment by radiation is the method of choice: Basal cell carcinoma especially as operation, involving removal of more than half of either lid, frequently entails subsequent enucleation to free the patient from the irritation and infection of an exposed globe. Epithelioma of the cornea which should be treated at one sitting with relatively unfiltered radium in cauterizing doses accurately applied. The cornea is ten to fifteen times more radio-resistant than the epithelium of the lids, hence will not perforate readily.

Sarcomata:

(*a*) Undifferentiated sarcoma: glioma of the brain or cord ought on *a priori* grounds to yield more readily to moderate radiation than any other known tumour.

(*b*) Lympho- leuco- and round-celled sarcomas: huge bulky tumours of this type have disappeared within a few days.

(*c*) Giant-celled sarcomas: the best method is radiation through the intact skin—the skin and tumour capsule should not be incised for diagnosis, as the scar may break down and infected cases as a rule do badly.

Myeloid deposits: several cases of three to five year regressions have been brought about by X-rays or radium.

Angiomas: the results are as a rule admirable.

Spring catarrh: the granulations could easily be caused to disappear by *beta* radiation.

In the following conditions the use of radium is of proven value but not necessarily the method of choice.

Adenoid cystic carcinoma of the skin or lacrymal gland: radium treatment has been entirely successful.

Prickle-cell carcinomas: no comment made.

Sarcomas and orbital melanomas of differentiated-cell structure: radium treatment usually of little value unless combined with surgical excision.

Actinomycosis, blastomycosis: radiation should be used as an adjunct to the usual iodide treatment. Six cases so treated were permanent cures.

Lupus vulgaris and erythematosus: radium the method of choice in all but the acute fulminating cases.

The following are conditions in which radium may be used when more traumatizing procedures are contra-indicated.

Cataract: no definite statement but quotations from papers where a large percentage of cases have shown improvement.

Pterygium disappears with radium therapy: some recur but many completely cured.

Papilloma, particularly susceptible, naevus and xanthelasma require considerably larger doses.

Cicatrices being more radio-sensitive than normal tissue can be markedly softened.

Trachoma and its complications: *beta* rays should cause disappearance of pannus and granulations with softening of cicatricial tissue.

Conditions where experimental use of radium would be justified.

Phlyctenular conjunctivitis and keratitis, because of the favourable effect of radium on tubercles and the surfaces of tuberculous ulcers.

Keratoconus: the scars from radium applications are uniformly less opaque than those from cauterization.

Chronic dacryocystitis: the granulations blocking the passage made in West's operation could be smoothed down permanently with radium.

Relief of pain frequently follows radium application to a tumour even though there be no gross effect.

Blepharitis: temporary epilation might aid in bringing about a cure.

Radium has also a large field in prophylactic procedures.

F. A. WILLIAMSON-NOBLE.

(5) **McKee, Albert, and Swett, Wilbur F. (California).—The use of radium in cataract.** *Amer. Jl. of Ophthal.*, August, 1924.

(5) **McKee** and **Swett** having noted that several authors claimed to have diminished lens opacities by the use of radium, decided to investigate this treatment. The procedure was as follows: 10 milligram hours twice a week for eight treatments, then once a week for eight treatments, then once a fortnight for eight treatments. The radium was in a suitable holder the open end of which was one centimetre from the cornea. The results obtained with twenty-five cases went to show that the therapeutic effect was *nil*, not a single case showing any improvement. Some cases claimed that their vision had improved but examination showed the opposite to have occurred; it could be traced to the effect of individual training and stimulation of interest in the examination, the lens itself showing no change.

There was no apparent injury to any of the structures of the eye except for an occasional erythema and slight irritability of the lids.

F. A. WILLIAMSON-NOBLE.

(6) **Johnston, Langloh (Sydney).—Radium in the treatment of rodent ulcers at Sydney Hospital.** *Med. Jl. of Australia*, November, 1924.

(6) **Johnston's** paper is based on a demonstration given at a meeting of the New South Wales branch of the British Medical Association in July, 1924. Radium has been used at Sydney hospital since 1911; about 2,000 cases of rodent ulcers have been treated in all and of these 90 per cent. have been absolutely cured. All the cases shown were treated more than ten years ago and the results as shown in the three pages of illustrations are obviously very good. It is well known that the majority of rodent ulcers react most favourably to radium treatment; in the cases here under review the results were obtained by a combination of the selective or specific action with the inflammatory reaction of radium. Of the cases described four were fungating epitheliomas, fourteen were rodent ulcers, one was a case of spring catarrh, one of keloid scar, one of cavernous angioma, and one of verruca necrogenica. The illustrations for the most part have come out well, but the picture of the case of spring catarrh hardly shows the state of affairs to advantage.

R.R.J.

(7) **Morón, J.—Bismuth in clinical ophthalmology. (El bismuto en la clínica oftálmica.)** *Arch. de Oftal.*, Vol. XXV, p. 443, August, 1925.

(7) Since Sezarac and Levaditi in 1921 introduced the treatment of syphilis by bismuth, a considerable number of observations has been published on the place of this addition to our therapeutic

armamentarium. The original compound—tartrobismuthate of sodium or potassium—has been largely replaced by the iodo-bismuthate of quinine (Fourmier and Guenot; *Acad. de Sci.*, Paris, Oct., 1921). Using this latter **Morón** reports the results of the treatment of 72 cases of ocular syphilis dealt with by him during the last twenty months.

The cases include the more acute complications, as well as those tertiary manifestations so frequently and typically met with in the eye, and which react so disappointingly to arsenical or mercurial medication. He finds the drug non-toxic, and that it possesses an especially marked therapeutic effect in the recent tertiary manifestations of the disease. On several occasions when mercury and arsenic have been given with little or no effect, the exhibition of bismuth has achieved dramatic results. In resistant cases it may well be substituted for these, and the employment of combined medication is not excluded. Especially in neuro-ocular manifestations is its superior efficacy marked.

W. S. DUKE-ELDER.

(8) **Gourfein, D. (Geneva).—The chemotherapy of ocular tuberculosis by means of the salts of bismuth. (De la chimiothérapie de la tuberculose oculaire par les sels de bismuth).** *Rev. gén. d'Ophtal.*, January, 1925.

(8) In the year 1921 **Gourfein** commenced the study of the action of bismuth as a therapeutic agent in syphilitic eye diseases and published two interesting articles in the *Revue générale d'Ophtalmologie* for 1922 and 1923. Abstracts of these articles will be found in the BRITISH JOURNAL OF OPHTHALMOLOGY for 1923, page 284, and 1924, page 41. Being well satisfied with the results obtained in syphilis by this method of treatment, and although he is well aware that there is no sort of consanguinity between the spirochaete and the tubercle bacillus, Gourfein decided to see whether the good results obtained in syphilis could be repeated in tuberculosis. He expresses himself as greatly astonished to find that they were so repeated, and six cases of eye disease clinically diagnosed as tuberculous were successfully treated by the intramuscular injection of tartrobismuthate of potassium and sodium. There is no doubt, says the author, as to the good effect of the treatment in these six cases, but while the condition was clinically tuberculous, the action of the salt must be confirmed by experiments on animals. About a score of experiments seem to have been carried through on rabbits, cultures of tubercle being injected into the iris, while the bismuth salt was injected intramuscularly (in most cases) at varying intervals thereafter. Not all the experiments are detailed in this article, but the author's conclusion is that in all the infected rabbits the bismuth salt retarded the

action of the tubercle infection, and had a curative effect in several of them. In all the controls, not treated by the bismuth salt, the evolution of tuberculosis was more rapid and severe. Gourfein is careful not to make too much of his results and hopes that further observation and experimentation will prove the value of this method of treating ocular tuberculosis.

ERNEST THOMSON.

(9) **Chaillous, J., and Cotoni, L.—Serums and vaccines in ocular therapeutics. (Sérums et vaccins en thérapeutique oculaire.)** *La Clin. Ophtal.*, November, 1924.

(9) It is always of interest to hear the conclusion of the whole matter even though one does not necessarily agree with all the conclusions. **Chaillous** and **Cotoni** have reported to the *Société d' Ophtalmologie de Paris* on the above-named subject. The article contains six chapters, namely: (1) on serums and vaccines in general: (2) serums, vaccines, and tuberculins in ocular tuberculosis; (3) vaccines and serums in ocular complications of gonococcic infection; (4) serum therapy and vaccination in ocular pneumococcic infections; (5) antitetanic serum therapy, (6) serum therapy and vaccinotherapy in staphylococcic and streptococcic infection of the eye and adnexa; (7) autoserumtherapy and autohaemotherapy in ocular therapeutics. The conclusions come to by the authors occupy a whole page of the journal; an effort is made to synopsize them usefully, as follows: in contrast to the undeniable results of antidiphtheritic and antitetanic serum therapy stands the inefficiency of serums and vaccines in the greater number of infections to which man is liable and which may involve the organ of vision. Tuberculosis is a case in point. Regarding antigonococcic serums, in spite of successes obtained in ocular therapeutics we should not rest content until such serums are clearly efficacious whatever the site of the infection. As to meningococcic infection the value at the present moment of serums and vaccines is mainly preventive rather than curative. Serum therapy is only an adjuvant in the treatment of pneumococcic hypopyon keratitis. Bacteriotherapy has had some success in the treatment of staphylococcic infections of the eyelids. The possibilities of zur Nedden's autoserumtherapy in sympathetic ophthalmitis should be borne in mind. The specific treatment of trachoma remains to be discovered.

ERNEST THOMSON.

(10) **Brandes, Dr. (Antwerp).—Chronic inflammation of meibomian glands and intestinal vaccine. (Meibomite chronique et entéro-vaccin.)** *Arch. d'Ophtal.*, March, 1924.

(10) **Brandes'** patient was a female, aged 44 years, who had suffered for two years from suppurative inflammation of the meibomian glands. Local remedies and fifteen inoculations of

antistaphylococcic vaccine had failed completely. Bacteriological examination of the nasal mucus discovered abundant bacillus coli and some unusual staphylococcus aureus. In the stools the colon bacillus predominated. A vaccine was prepared from the bacillus coli from both sources. Ten injections in increasing doses were given, the first four every fourth day, the others at intervals of a week. The general reaction was slight and after the third injection the temperature did not rise above 37.6° C. After the fourth injection the patient expressed herself as better in health. Six months later there had been no recurrence of the tarsal inflammation.

The author's discussion of the interpretation to be placed upon the result of his treatment should be read in the original.

J. B. LAWFORD.

(11) **Aubineau, E. (Nantes).—A trial of "tuberculin therapy by ingestion" in ocular therapeutics. (Essai de "tuberculinothérapie par ingestion" en thérapeutique oculaire.)** *La Clin. Ophtal.*, July, 1924.

(11) **Aubineau,** after some remarks on the literature of the subject, tells how he, with the utmost scepticism, made trial of the internal administration of the Russian tuberculin "endotine," which tuberculin is characterized by the absence of exotoxins. His conclusion from the observation of three cases is a very modest one and may be given in his own words: "The object of this study is limited to the possibility of action of tuberculin introduced by the mouth. Our observations appear to demonstrate that 'tuberculintherapy by ingestion' may be efficacious and merits attention. In bearing witness to what we saw, or rather, to what we believed we saw, we may express the strong desire that similar trials by other hands and eyes will either confirm or refute our results."

ERNEST THOMSON.

(12) **Allisson, F. H. (Geneva).—A note on two new cases of gonococcal purulent conjunctivitis in the adult successfully treated by heterobacteriotherapy. (Note sur deux nouveaux cas de conjonctivite purulente gonococcique de l'adulte traités avec succès par l'hétérobactériothérapie.)** *Rev. gén. d'Ophtal.*, December, 1923.

(12) **Allisson** refers in the first place to three cases of adult gonococcal conjunctivitis treated by subcutaneous injections of typhoid bacilli according to the method of v. Szily and Sternberg, which cases were recorded in *Rev. gén. d'Ophtal.*, p. 101, 1922 (*vide Brit. Jl. of Ophthal.*, p. 190, 1923).

The present cases are those of two adults with gonococcal purulent conjunctivitis and their importance lies in the fact that no other method of treatment whatever was employed, unless one counts as treatment the use of a preliminary washing out of the culs-de-sac with 1 in 2,000 permanganate of potassium solution. The following is a summary of the treatment:

Case I.—September 14, 1922: subcutaneous injection in the left arm of 0.5 c.c. of typhoid vaccine; no rise of temperature. September 17: no change; secretion very abundant. September 18: injection of 1 c.c. vaccine; temp. 38.8° C.; less secretion and less chemosis. September 21: injection of 1 c.c. of vaccine; temp. 39.2° C.; secretion almost *nil*; eyelids no longer oedematous; chemosis gone, three small ulcers near the limbus. September 25: corneal ulcers completely filled up, eye normal; visual acuity 1. *Case* II.—The details of treatment are practically the same as in the first case; one injection of 0.5 c.c. and two injections of 1 c.c. of vaccine resulted in complete cure with full vision in six days; there was no corneal ulceration in this case; the maximum temperature reached was 39.2° C.

These results are extremely interesting. The author refers to the work of others who have used the method.

ERNEST THOMSON.

(13) **Fietta (Fribourg).—Some trials of iontophoresis with atropin. (Quelques essais d'iontophorèse à l'atropine.)** *Rev. gén. d'Ophtal.*, August, 1924.

(13) **Fietta** deals in a very fair and judicial way with the question of the value of iontophoresis with atropin. Hitherto, he states, iontophoresis has been carried out in ophthalmology with a very limited number of substances, chloride and iodide of sodium, zinc sulphate, and salicylate of soda; but there seemed no reason why atropin, for example, should not be capable of electrolysis, and, applied in the form of ions, give stronger results than when used in the ordinary way. On examination, however, of the constitution of the alkaloid it turned out that, according to Richet, the various bodies into which atropin is transformed by the addition or subtraction of water, are by no means active. When heated and submitted to the action of acids, atropamin ($C_{17}H_{21}NO_2$) and water are formed from atropin ($C_{17}H_{23}NO_3$) while, on the other hand, hydration results in the formation of tropic acid ($C_9H_{10}O_3$), and tropin ($C_8H_{15}NO$). It was clear, then, that even supposing atropin to be capable of decomposition by electrolysis the resulting bodies would not be harmful. Now, although we know practically nothing about the ionization of alkaloids, it seemed probable that a solution of sulphate of atropin would be decomposed into an acid radical and atropin itself with unimpaired properties. The

question which required an answer was whether atropin ionised would be more active than when instilled and give stronger, more rapid and more lasting results, and would break down synechiae which had resisted instillations. The first point to be decided was the action of atropin ionization on the normal eye. Owing to the extreme sensitiveness to atropin of the human eye as compared with the eye of certain other animals (some of which are very resistant to atropin, *e.g.*, rabbit, which can feed upon belladonna leaves), experiments in ionization were carried out on the rabbit. The results were quite positive, for whereas instillation of 1 to 1,000 or 5 to 1,000 gave very little result, iontophoresis for one or two minutes at one milliampére gave quite marked and rapid mydriasis with abolition of the pupil reflex. Obviously the alkaloid had not lost its properties and in the ionic state had increased activity.

It would occupy too much space to give details of the four cases of rebellious iritic adhesions which the author now treated with atropin iontophoresis. The result only will be given here. The solution of atropin sulphate employed was 1 to 1,000, the current employed was from 0.75 to 1.25 milliampéres and the duration 1.5 to 2 minutes. The results were only moderately satisfactory so far as the breaking down of adhesions was concerned. As the result of thirteen applications in the four cases complete rupture occurred twice and partial rupture three times. The author suggests that better results might be obtained with stronger solutions of atropin or more powerful mydriatics such as scopolamin, but he points out that such applications might not be very "convenient" since all his patients suffered to some extent from headache after the treatment with 1 to 1,000 atropin. He suggests the further exploration of a method which might be of considerable value.

ERNEST THOMSON.

(14) **Ring, G. Oram (Philadelphia). — Adrenalin chlorid with special reference to its subconjunctival injection for glaucoma.** *Amer. Jl. of Ophthal.*, July, 1925.

(14) **Ring,** after referring to Gradle's article gives a brief résumé of the various effects produced by adrenalin. The following points are worthy of note. Pilcher in 1914 found that its injection, under pressure, into the nasal submucosa is almost equivalent to intravenous injection; a lethal dose causes acute dilatation of the heart and pulmonary oedema; solutions may be boiled once or twice without losing their potency; when dropped into the eye it produces widening of the palpebral fissure and slight exophthalmos as well as blanching of the conjunctiva, and where the sympathetic mechanism is abnormally sensitive, as in hyper-

thyroidism, mydriasis occurs. In the ordinary way this is not brought about unless the drug is injected subconjunctivally. Loewi's sign, *viz.*, that such mydriasis indicates pancreatic insufficiency or hyperthyroidism is not sufficiently constant to be of value. Adrenalin mydriasis is accompanied by a lowering of tension due to local vaso-constriction, which is followed later by vaso-dilatation, and a rise in tension; it is therefore advisable to follow the adrenalin with some miotic in cases of glaucoma. Adrenalin is therefore useful (1) where atropin is only partially successful in breaking down synechiae; (2) when " despite our desire to continue the mydriatic we are compelled to resort to the miotic because of the sudden rise in tension." The author concludes with an account of three glaucoma patients in whom adrenalin was used and produced an almost immediate and rather startling decrease of tension, which he followed in 48 hours by posterior sclerotomy. The usual dose is 4 m. of 1/1,000 adrenalin, injected subconjunctivally, midway between the lower border of the cornea and the inferior fornix.

F. A. WILLIAMSON-NOBLE.

(15) **Fraser, Francis R. (London).—Iodine in exophthalmic goitre** *Brit. Med. Jl.*, January 3, 1925.

(15) **Fraser,** who is the Director of the Medical Professorial Unit of St. Bartholomew's Hospital, gives in this paper the results which have been obtained in the wards of the hospital in a series of 24 cases of Graves's disease. For more than a hundred years a relationship between endemic goitre and iodine has been recognized and the earlier physicians tried iodine extensively in the treatment of goitre with the result that a certain number of cases so treated developed a state of affairs resembling true Graves's disease; the pendulum swung back and iodine was given up to a large extent in the treatment of thyroid cases.

Of late years evidence has accumulated to show that in exophthalmic goitre an iodine deficiency may be present and that the administration of that drug may have some therapeutic value in these cases.

Eight of the author's cases are here described in some detail; the rest of his paper deals with the regulation of the dosage and discusses the results of recent workers, mainly American, in this field. A good bibliography of modern work on the subject is appended. Fraser's conclusions are as follows:

"(1) The effect of iodine administration has been studied in twenty-four cases of exophthalmic goitre.

(2) Iodine can bring about a lowering of basal metabolic rate, and of heart rate, and an increase of body weight, with a striking improvement in the general condition of the patient.

(3) The improvement obtained with iodine does not as a rule persist.

(4) The optimum dose at the commencement of the treatment appears to be about m. xv of a 10 per cent. solution in alcohol, but this dosage cannot as a rule be maintained more than a few days or weeks. If the administration is stopped the condition immediately relapses. For prolonged treatment the dose should be lowered as soon as the initial improvement has taken place, and the administration continued with doses of m. iij to m. vj daily. The dosage must be carefully regulated according to the condition of the patient.

(5) Increasing hardness of the thyroid gland is an indication for a smaller dosage.

(6) The condition of the patient may be made worse, instead of better, if too large a dosage is employed."

R.R.J.

(16) **Donnell, N. R. (St. Louis).—Treatment of trachoma with strong solutions of silver nitrate.** *Arch. of Ophthal.*, September, 1924.

(16) South-east Missouri being a hotbed of trachoma Donnell has had considerable clinical experience of this disease during his twelve years of work there. He found that even pannus and ulcers were no contraindication to the use of 2-3 per cent. silver nitrate solution. A case in point is a boy, aged 18 years, who was seen in 1915 and treated for six months on the lines indicated below. The corneae cleared, the lids smoothed down, vision was improved to 20/30, and although he has had no further treatment there have been no recurrences up to date. The technique is as follows: Three instillations of 5 per cent. cocain precede all applications. Cotton wool is wrapped tightly round a toothpick and dipped in a 1 per cent. solution of silver nitrate, all excess of solution being removed. This is applied to the inside of the lids with fairly stiff massage two or three times a week. The strength of the solution is gradually increased until the point of toleration is reached. This varies in different patients, strengths up to 10 per cent. having been used. The conjunctiva is irrigated with normal saline before allowing the everted lids to resume their normal position if the strength of the silver nitrate is 2 per cent. or greater. Ice packs are used after the application of strong solutions. The best results are obtained in the chronic cicatricial stage of the disease, the acute follicular cases being more intractable. The author considers, however, that in these cases one obtains better results by silver nitrate than by any other method.

F. A. WILLIAMSON-NOBLE.

17) **Nicati, W. — Note on the curability of granular ophthalmia by sterilizing injections, and the apparent specificity of action of sulphate of copper. (Note sur la curabilité de l'ophtalmie granuleuse par les injections stérilisantes et l'apparente spécificité d'action du sulfate de cuivre.)** *La Clin. Ophtal.*, February, 1924.

(17) The essence of Nicati's article is fairly well summed up in the title. The author pins his faith to "dear old copper," a well-known remedy since the time of Hippocrates. But he employs the remedy in the form of injections of a strength from 1 to 1,000 to 1 to 100, and especially the last named. "The application is made in the conjunctival cul-de-sac immediately behind the edge of the everted tarsus. It should be repeated soon after the disappearance of the very intense oedema brought about in the eyelid, say after approximately eight, ten, or fifteen days. The maximum number of applications has been six for each eye." Under this treatment the cicatrix is said to be pale, flat, and superficial and not accompanied by palpebral inversion. The author holds that the disease in question is "eminently curable."

ERNEST THOMSON.

(18) **Poyales, F. (Madrid).—Ocular phototherapy with Koeppe's apparatus. (Primeros ensayos de fototerapia ocular con el aparato del Profesor Koeppe.)** *Arch. de Oftal., Hispano-Amer.*, Tomo XXV, pp. 555-559, October, 1925.

(18) **Poyales** records very favourable results from an initial series of cases treated by phototherapy, using the instrument and technique of Koeppe (*Diathermie u. Lichtbehandlung des Auges*, Leipzig, 1919). By this instrument filtered light of wave-length 3,500-5,000 Å is focussed directly upon the eye, and the optical system is so adjusted that a diffuse light can be rayed over the eye and lids, or a concentrated beam can be focussed upon the structures of the anterior part of the globe. Using the former technique ("external phototherapy"), in sittings starting with one to two minutes duration, and working up to ten minutes, Poyales has obtained results which may be summarized as follows: blepharitis uncomplicated by refractive errors, and resistant to treatment by drugs locally, clears up after the first few treatments; persistent treatment (up to 40 sittings) completely takes away the inflamed appearance of the lid margins, and induces the lashes to re-grow. Phlyctenular conjunctivitis reacts well; the soothing effect on the photophobia is especially marked, immediate relief, though somewhat temporary, being often obtained. Superficial corneal ulcers rapidly improve, and are cured in eight to ten sittings. In severer ulcers (serpiginous, etc.) he considered that

the gravity of the lesion did not justify him relying entirely on light treatment; local treatment by drugs was therefore used as well. The impression, however, gained is that the light therapy is of real value in these cases. He considers benefit to be derived from the method in iritis and chronic glaucoma, but none in interstitial keratitis, vernal catarrh, and old trachomatous lesions with pannus, ectropion, etc. The second method of application ("internal" phototherapy) was used in conjunction with the "external" treatment in cases of chronic irido-cyclitis and choroiditis. Satisfactory results are claimed here also; a case of tuberculous iritis reacted particularly well.

W. S. DUKE-ELDER.

III.—ANATOMY AND PHYSIOLOGY

(1) **Fortin, E. P.—A simple entoptoscope for viewing the retinal circulation. (Presentacion de un pequeño aparato para la visiôn entôpica de la circulaciôn retiniana y glóbulos de la sangre.)**

Proof of the histological localization of some entoptic phenomena. Investigations on a hitherto undescribed layer of the retina. (Ensayo sobre la localización histológica de algunos fenómenos enótpticos. Investigaciones sobre pequeños aparatos dióptricos no descritos y que forman una capa perfectamente regular de la retina.) *Revista de la Soc. Argentina de Biologia*, Tomo I, No. 2, May 1925.

(1) **Fortin** has devised an entoptoscope for which he claims simplicity in principle, ease in application, and clearness in results. It is particularly suitable for viewing entoptically the vitreous and the foveal retina. In 1907 he demonstrated to the Academy of Sciences at Paris a similar instrument, using as a source of light a mercury vapour lamp of the type devised by Cooper Hewitt. The price and inconvenience of this instrument has prevented its general clinical application, and for this he now utilizes intense solar light concentrated by a convex lens, and filtered through blue glass which transmits a diffuse, homogeneous, monochromatic blue light of wave-length 4360 Å. Against this uniform blue field there stand out clearly the histological elements of the vitreous, and the structural details of the foveal region, with a clear picture of the capillary vessels and their contained red cells.

The Histological Structure of the Vitreous.—With the aid of the entoptoscope the principal structural elements of the vitreous

are seen to be elongated narrow cylinders, which, internally and externally, have a calibrated appearance, presenting constrictions at more or less regular intervals. The author compares them to collars of pearls with several detached pearls at the ends of the string. There are many immature and intermediate forms, but it would seem probable that these are derived from a common source. They move about continuously, responding to every movement of the eyes, rolling up, and becoming entangled in bundles. When they congregate in front of the macula in great numbers they obtrude themselves upon, and may even impede vision to an appreciable extent, constituting the material basis of the every-day "subjective" phenomenon of "muscae volitantes."

The Perifoveal Circulation.—Against the blue field of the entoptoscope the retinal blood-vessels of the foveal region are easily seen, and the circulation of the red blood corpuscles readily observed. At the fixation point itself there are no capillaries, and there are no vessels of size greater than a capillary for some distance round that area. These are so small in calibre as to allow only one erythrocyte to pass at a time, and these pass in a regular sequence separated the one from the other by a column of plasma. The vessels in this neighbourhood appear and disappear from time to time, and are distributed in a regular manner all round the fixation point, being separated by quite regular intervals.

The Structure of the Macula.—For the examination of the macula, if the eye is placed behind a filtering screen which excludes all rays except the yellow of wave-length 5770 Å ., a direct view of this region is obtained as a clear, sharply defined positive image against the yellow field.

If between the source of light and the eye a Nicol prism is interposed and slowly rotated, a mosaic of circles is seen entoptoscopically in the region of the fovea. Under ideal conditions, that is, with a bright mercury vapour lamp, a diaphragm interposed to reduce the field of projection, and the eye placed at a suitable distance so as to obtain the maximum magnification of the smallest field, it is claimed that these are readily demonstrable clinically with monochromatic light of very varying wave-lengths, red, green, or yellow. This observation is not new, and they have already been described as "les Houppes de Haidinger"; Fortin has, however, attached much importance to them. He argues that, since they appear as small, equal circles arranged side by side in one plane, they must be the optical effect of an extremely delicate, single, regularly arranged histological layer in the retina, which he has located, partly by a process of exclusion, partly by the method of parallax, in the layer of fibres of Henle, between these and the layer of internal granules.

He explains the fact that this has hitherto escaped detection by the usual histological methods as due to its delicate and transparent nature. By taking fresh sections from the eyes of chloroformed animals, he has demonstrated a hitherto undescribed layer in the foveal region of the retina, situated between the fibres of Henle and the internal granular layer, monochromatic photographs of which are reproduced in his paper. It is composed of a single stratum of transparent bell-like structures, characterized by the regularity of their arrangement. They are closely packed, there being more than 800,000 to the square centimetre. Each lies with the dome of the bell towards the cones, and the mouth is closed by a plano-convex meniscus, from the centre of which a fine fibre runs into the layer of internal granules.

The author hazards the opinion that the study of the characters and the functions of this layer, and of the fibres of Henle which surround it, may throw some light on obscure points in the physiology of the retina, and that a knowledge of its morbid changes may lead to a better understanding of such little understood pathological problems as failure of fixation, amblyopia, strabismus, and nystagmus.

This paper may be compared with interest with :

Scheerer, R. (Tübingen).—Ueber den Nachweis von Netzhautgefässstörungen auf entoptischen Weger. XLIV. *Deutsch. Ophthal. Gesell. in Heidelberg*, June 14, 1924. Abs. *Klin. Monatsbl. f. Augenheilk.*, Bd. LXXII, s. 790, 1924.

Ibid.—Die entoptische Sichbarkeit der Blutbewegung im Auge und ihre klinische Bedeutung. *Klin. Monatsbl. f. Augenheilk.*, Bd. LXXIII, ss. 67-107, 1924.

Scheerer used an arc lamp viewed through a uviol glass filter, by which simple means the red blood corpuscles are seen entoptoscopically as small bright spots. Over 550 eyes were thus examined clinically, and the circulation studied in the normal and various diseased states. The optical physics of the phenomena of entoptoscopic vision are given in detail, as well as a very comprehensive bibliography of the theoretical and clinical issues involved.

Former communications by Fortin on this research are :

Arch. d'Ophtal., 1906-1908—
Essai sur la Physiologie de la Fovea centrale.
Du scotome central dans l'ambliopie congénitale (avec Scriñi).
De la méthode entoptique comme méthode de diagnostic.

Receuil d'Ophtal., 1906-1908—
D'une théorie psychophysiologique de la vision.
Les Houppes de Haidinger, test de vision centrale.

Comptes rendus, Acad. des Sciences de Paris, June 1, 1908.
Confer. en la Facultad de medicina de Buenos Aires, October 4, 1924.
Asociación Médica Argentina, May 7, 1925.

W. S. DUKE-ELDER.

(2) **Bednarski, A. (Lwow, Poland).—Physiological excavation of the optic nerve. (De l'excavation physiologique du nerf optique.)** *Arch. d'Ophtal.*, January, 1925.

(2) **Bednarski** has examined ophthalmoscopically 833 eyes in reference to the presence or absence of excavation of the optic nerve in emmetropia and varieties of ametropia. He finds that an appreciable excavation is present in 86 per cent. of emmetropic eyes; the same percentage is found in hypermetropia up to 3D.; in hypermetropia from 3D. to 5.5D. the percentage is 74, and in hypermetropia of 6D. and higher it drops to 34. In low myopia, up to 3D., 84 per cent. show excavation; in myopia from 3 to 8D., 23 per cent.; in myopia of 9D. and upwards the percentage is only 5. In cases in which the refraction is equal or nearly so in the two eyes the excavation is, with few exceptions, of equal depth; in cases of anisometropia the eye with faulty refraction almost invariably shows a lower degree of excavation.

J. B. LAWFORD.

(3) **Edmund, Dr. Carston and Möller, H. Ulrik (Copenhagen.)—Vision in light of reduced intensity.** *Arch. of Ophthal.*, November, 1925.

(3) **Edmund** and **Möller's** work was carried out with a series of what are known as photometric glasses, manufactured according to Tscherning's specifications. The glasses are made in the same way as Triplex glass, with a central sheet of neutral grey gelatin. By varying the thickness of the sheet, it is possible to obtain variations in the amount of light transmitted. They are numbered from 1 to 10 in such a manner that number 1 transmits $\frac{1}{10}$ of the light, number 2 $\frac{1}{10}$ number 3 $\frac{1}{10^3}$ and so on, the unit being called a photoptive (Ph). The advantage of this scale is that the glasses may be added in the same manner as spectacle glasses, measured in dioptres. Thus Ph. 2 combined with Ph. 1 is equivalent to Ph. 3. Fractions are also provided, 0.25, 0.50 and 0.75. It is suggested that a similar scale would be useful for the classification of smoked glasses.

The degree of brightness of an object (C.) is determined by the strongest Ph. glass through which a maximally adapted eye is just able to see it. Maximal adaptation is obtained by wearing Ph. 10 light-proof for half an hour. Under these conditions, the normal individual can just see a square of white paper 27. mm. square at 1 metre's distance and illuminated by a standard candle, through Ph. 5. The degree of brightness of this paper is therefore put at C.=5; if a ten candle power lamp be used, it becomes 6 while a 100 *cp. gives 7 and so on.* The degree of brightness of a candle flame is 10. The unit is the faintest light which a fully adapted eye

can just perceive and corresponds to $\frac{1}{10^{10}}$ of the brightness of a candle flame. A brightness of 5 means that an object is 10^5 times as bright as the unit. *Power of distinction.*—This follows the usual Fechner or Bouguer law, the normal eye being able to distinguish the difference in brightness of two well illuminated objects provided this difference is not less than $\frac{1}{100}$ of the total brightness. Tscherning designates this faculty by the letter D. and suggests the following method of measuring it:

D.=0 Bouguer's fraction $= \frac{1}{10^0} = 1$

D.=1 „ „ $= \frac{1}{10^1} = \frac{1}{10}$

D.=2 „ „ $= \frac{1}{10^2} = \frac{1}{100}$

D.=0.75 „ „ $= \frac{1}{10^{0.75}} = \frac{1}{5.6}$ and so on.

Special grey test types have been devised for measuring this power, the letters being large so as to rule out the effect of visual acuity and illuminated to a degree of brightness C.=8. Various observations have been made with these glasses, among which are the following: The normal range of adapatation is up to 10 Ph. if eccentric fixation is used, in the centre, however, the range is only 7 Ph. This difference is accounted for by absorption due to the yellow pigment of the macula. The more the illumination is reduced the greater becomes this central scotoma. The time required for complete adaptation varies enormously with the pre-exposure. If it has been bright sunlight one requires half an hour of darkness before being able to see a candle flame through Ph. 10; if it has been lamplight, only 10 minutes are required. The above statement applies only to peripheral sight. On account of its yellow pigment, the macula is already in a state of adaptation which corresponds to that which the periphery has, after wearing Ph. 3 for some time. The centre therefore attains its maximum adaptation. (Ph. 7) very rapidly. On passing from darkness to light, adaptation is lost quickly at first and then more slowly, the process taking about the same time as that required for adaptation. If test types are illuminated to the degree C.=8, Ph. 1 or even Ph. 2 will not reduce visual acuity. A more or less proportional diminution occurs however with the stronger Ph. glasses, and a curve may be plotted with Ph. units as abscissae and visual acuity as ordinates. The normal curve differs considerably from that found in conditions such as hemeralopia idiopathica, glaucoma simplex, etc.

F. A. WILLIAMSON-NOBLE.

IV.—DISEASE OF THE LENS

(1) **Pesme, P., and Chauliac, J. (Bordeaux). — Congenital anterior capsular cataract. (Cataracte congénitale capsulaire antérieure.)** *Arch. d'Ophtal.*, June, 1925.

(1) **Pesme and Chauliac** describe and illustrate an unusual variety of cataract unlike any reported examples which they have been able to find. The condition was discovered accidentally in a soldier, aged 26 years. The opacities examined in the ordinary way resembled spots of candle grease (*taches de bougie*). By oblique illumination each eye shows on the anterior surface of the lens, and limited to the pupillary area, a series of rounded dead white spots. They vary in size from that of a pin's head to that of a millet seed and are arranged in a rough circle. Examined with a corneal microscope and slit-lamp the spots appear to be quite superficially in the anterior capsule, as if imbedded in this structure. Each spot is bounded by a minute depression which appears dark or luminous according to the incidence of the rays of light. This halo has been noted by Vogt who believes it to be constantly present in anterior capsular cataract. Each spot is dead white in direct illumination and its surface has a felted appearance, whereas by transmitted light it is translucent and faintly brown. The opacities are very thin and do not encroach upon the layers of the lens immediately beneath the capsule.

In the right eye there is a small remnant of pupillary membrane, and in both eyes are small areas of minute pigment dots in the circle of the grease spots.

The authors consider this case to be one of congenital cataract; no family history of defect of vision was obtainable, but it does not appear that any other members of the family had been available for examination.

J. B. LAWFORD.

(2) **Gourfein-Welt, Madame L. (Geneva).—Does the blood-serum of cataractous patients differ from that of the non-cataractous? (Le sérum du sang des cataracteux difière-t-il de celui des non-cataracteux?)** *Rev. gén. d'Ophtal.*, April, 1925.

(2) **Gourfein-Welt's** short article appears to be of the nature of a preliminary communication of investigations on the subject of the question asked in the title, based on the determination of refractive indices. The details of experimental method should be sought in the original. Suffice it here to say that the author compares by means of the Zeiss refractometer the respective refractive indices of (1) human-blood serum alone; (2) blood-serum of non-cataractous persons *plus* dessicated lens matter; (3) blood-serum of cataractous persons *plus* dessicated lens matter. The principal conclusions reached are the following: (1) The index

of refraction of human serum in presence of dried pulverized human cataract was, in 57 cases out of 64, higher than that of serum alone. The blood-serum thus possesses a modifying power with regard to the cataractous matter; (2) the difference between the index of refraction of serum plus cataract (S. *plus* C.) and that of S. alone of the cataractous is almost always smaller than that which exists between the index of refraction of (S. *plus* C.) and S. alone of the non-cataractous.

From these conclusions it follows that the modifying power of blood-serum with regard to cataract powder is lower in the cataractous than in the non-cataractous. These conclusions differ from those of v. Hippel and Abderhalden and of Schoeppe, on the one hand, and from those of Roemer and Gebb on the other. The author does not consider that her conclusions are definite, or complete: far from it, indeed, since a crowd of questions are presented for solution.

ERNEST THOMSON.

BOOK NOTICES

Transactions of the American Ophthalmological Society, Vol. XXIII. Pp. 363. Two coloured plates and numerous text illustrations. Philadelphia, 1925.

The sixty-first Annual Meeting of the American Ophthalmological Society was held at Washington, D.C.; the volume under notice contains the papers read and the discussions that took place. Some of these have already received notice in our columns and we hope to deal with some of the others later. The volume in make-up and general appearance bears a striking resemblance to that of the Ophthalmological Society of the United Kingdom with the exception that its records are confined to those of the American Society, but do not contain a Bowman Lecture or any equivalent for that valuable feature. The two coloured plates, if of no very exceptional interest, are of great excellence. All the papers contain many points of interest and reflect credit on writers and on the Society.

Archivos de Oftalmologia de Buenos Aires. November, 1925, No. 1, Tom. 1, and December, No. 2, Tom. 1.

Argentine ophthalmology has reason for congratulations on the appearance of the first two numbers of the above-mentioned journal. Both the paper and the printing are excellent. Many of the contributions have previously been read at meetings of La Sociedad de Oftalmologia. The Inaugural Address of the Professor of Ophthalmology, Argañaraz, contains an interesting account of

the earlier Argentine ophthalmologists. Among these may be mentioned Aguirre, a man of character and action, who was not only an ophthalmologist but a great patriot, and who was Dean of the Faculty of Medicine from 1875 to 1884. He was succeeded by Lagleyze, who was an ophthalmologist of European as well as of American reputation. Among the activities of Lagleyze was a substantial and important volume on strabismus, published in French, which the reviewer has before him. Demaria has been appointed honorary professor of ophthalmology; it may be noted that during the last year he published observations of interest on trachoma in the Argentine; and is now in Egypt studying the trachoma problem.

These first two numbers contain many interesting papers, some of which will be referred to later.

Migraine and other Common Neuroses. By F. G. CROOKSHANK. Psyche miniatures, medical series, No. 1, pp. 101. London: Kegan Paul, Trench, Trubner & Co., 1926. Price, 2s. 6d.

The first of these miniatures of the medical series consists of two papers on the psychological interest in the common neuroses, and migraine and its allies, reprinted from *Psyche* and the *Medical Press and Circular* respectively. The author describes his little book as "a psychological study." He is insistent on the need for medical men to recognize that in every functional case there is a physical defect, and in every case of organic disease, some psychological factor. The book should be of use both to medical practitioners and to the laity.

Paper and printing are very good, and while we are not fond of freaks in size of books, there is much to be said in favour of a work such as the present, which is of very handy size.

CORRESPONDENCE

AN OPTOMETRY DREAM: AN UNSELECT CHARTER!*

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—Having fallen asleep over the annotation on the proposed Optical Practitioners' Bill in your last number I had a curious dream. It was that King John, irritated at not being able to see the proper place at which to sign Magna Carta, had been promptly supplied with a pair of glasses by one of the barons, to whom he thereupon granted a messuage with curtilage adjoining, in the parish of Wigmore, by the tenure of finding yearly a new pair of spectacles at the feast of the Annunciation. It was a curious

*With apologies to Bishop Stubbs.

hotch-potch, for John did not sign Magna Carta and glasses were hardly in general use at this early date; but I was so much impressed by the coincidence of Wigmore that I looked through the calendar of patent rolls in my possession, but found no allusion to any such grant.

I have therefore deemed it advisable to draw up a form of licence from the Minister of Health to all surgeons' opticians to enable them to carry on their trade, and to obviate any necessity on the part of the old-established firms having to register under the proposed Act; for I hold that such firms are enfeoffed of their business by old enfeoffment.

NEVILLUS, dei gratia, Senescallus Sanitatis, Omnibus ad quos presentes littere pervenerint, salutem. Sciatis quod nos de gratia nostra speciali ac pro tres libras argenti, nobis in hanaperio solutis, concessimus et licenciam dedimus ac per presentes concedimus et licenciam damus, pro nobis et successoribus nostris, quantum in nobis est, dilectis nobis ——— et ——— de Wigemorestrete in comitatu Middlesexie, vendere spectacula possint. NOLENTES quod predictus ——— vel heredes sui, aut prefatus ——— vel heredes sui, ratione premissorum, per nos, heredes vel successores nostras, aut per justiciarios, escaetores, vicecomites, ballivos, aut alios officiarios seu ministros nostros, aut dictorum heredum vel successorum nostrorum quoscumque inde occasionentur, molestentur, impetantur, vexentur in aliquo, seu graventur. In cujus rei testimonium has litteras nostras fieri fecimus patentes. Teste me ipso apud Westmonasterium primo die Aprilis (die omnium vervicium), 1926.

TRANSLATION.

Neville, by the grace of God, Minister of Health, to all to whom the present letters shall have come, greeting. Know ye, that we of our special grace and for three pounds of silver paid to us in our hanaper, have conceded and granted licence and by these presents concede and grant licence for us and our successors, as far as in us lies, to our beloved ——— and ——— of Wigmore Street in County Middlesex, that they may be able to sell spectacles. BEING UNWILLING that the aforesaid ——— or his heirs, or the aforesaid ——— or his heirs should by us, our heirs or successors, or by our justices, escheators, sheriffs, bailiffs, or other our officers or servants, or by the heirs or successors of our said servants be, in the matter of these premises, disturbed, molested, impeached, vexed in anything, or oppressed. In witness whereof we have caused these our letters to be made patent. Given by me at Westminster on April the first (All Fools Day), 1926.

Such a licence as this strikes me as being both neat and sufficiently comprehensive to meet all the requirements of the firms in question.

Yours truly,

JACOBUS.

OBITUARY NOTICES

WE regret to record the death at Malahide, on February 18, of Mr. J. B. STORY, since the death of Sir Henry Swanzy, the doyen of the Irish ophthalmologists. Born, August 31, 1850, Mr. Story was the son of the Rev. William Story, Rector of Aghabog, Newbliss, co. Monaghan. He was educated at Winchester,

entering "Commoners" in 1862, in the headmastership of George Moberly, later Bishop of Salisbury. From Winchester he proceeded to Trinity College, Dublin, where he was 1st Senior Moderator in 1872; he took his M.B., B.Ch. in 1876, and the F.R.C.S.I. in 1880; studying also at Vienna and at Zurich. He was a Fellow, and at different times, Member of Council and General Secretary of the Royal Academy of Medicine, Ireland; Surgeon-Oculist to the King in Ireland, and Surgeon-Oculist to the Lord-Lieutenant.

Story held many public appointments in his native country; thus he was Surgeon to the Royal Victoria Eye and Ear Hospital; Professor of Ophthalmology and Aural Surgery, R.C.S.I.; Hon. Oculist and Aurist, Claremont Institute for the Deaf and Dumb, and to St. Joseph's Male Blind Asylum, Drumcondra; and Examiner in Ophthalmic Surgery at the University of Dublin.

Besides all this he was High Sheriff of Co. Tyrone in 1911, President of the Irish Medical Association in 1913; and President of the Royal College of Surgeons in Ireland; and President of the Ophthalmological Society of the United Kingdom, 1918-1920. He was also Hon. Secretary of the Dublin Branch of the National Service League from its foundation till it closed down during the war. Mr. Story was one of the rapidly dwindling band of original members of the Ophthalmological Society of the United Kingdom, of whom only fourteen still retain their names on the list of members.

Without being a prolific writer, Story did a good deal for ophthalmology during the years in which he worked for the *Ophthalmic Review*; many of his papers appeared in that journal and in the *Transactions of the Ophthalmological Society of the United Kingdom*, while he wrote the excellent biographical memoir of Sir W. R. Wilde, which appeared in the BRITISH JOURNAL OF OPHTHALMOLOGY (Vol. II, p. 68). He was a very familiar figure at the meetings and later at the annual congresses of the Ophthalmological Society; his years as President of the Society fell in difficult times, but notwithstanding his double presidency of the Society and of the Royal College of Surgeons in Ireland, he hardly ever missed a council meeting; he was a dignified president, and our readers will remember his unfailing championship of the memoranda addressed to the General Medical Council which called attention to the lack of proper education in our speciality which the majority of English medical students receive prior to entering for the qualifying examination.

Mr. Story married in 1892, Blanche Christabel, daughter of the Rev. J. W. Hallowell and practised in Merrion Square, while his country home was at Corick, Clogher, co. Tyrone. To his widow and daughters we extend our heartfelt sympathy.

THE sudden death, briefly recorded in our last number, of Mr. M. W. B. OLIVER, came as a great shock to his many friends in and out of the profession. He always looked to be in the best of health, but died on February 10, after a very short illness, from pneumonia.

Born early in 1882, he was a son of the late Rev. Robert Oliver, of Whitwell in the Isle of Wight. He was educated at Cheltenham College, Trinity College, Cambridge, and St. Bartholomew's Hospital. He took his B.A. in the Natural Sciences Tripos in 1903, and qualified (M.R.C.S., L.R.C.P.) in 1906. His first appointment was that of House Surgeon to the eye department of his own hospital; this post he held for nine months and then became resident at St. George's Hospital in October, 1907. Here he spent two years, and in 1909 he took the M.A., M.B., B.Ch., Cantab., and in 1914 he passed the final F.R.C.S., and was elected Assistant Ophthalmic Surgeon to the Miller General Hospital, Greenwich. At the outbreak of the war he joined the R.A.M.C. and served in France continuously till 1919, being surgical specialist, No. 15 Casualty Clearing Station, with the rank of major. He was mentioned in Despatches and received the O.B.E.

Oliver was a tireless worker as a chief assistant in the eye department of St. Bartholomew's Hospital and at the Royal London Ophthalmic Hospital, before he was elected on the staff of the Central London Ophthalmic Hospital. After the war he did much useful work at the Sidcup Hospital and at Queen Mary's Auxiliary Hospital, Roehampton, and besides all this he held the appointments of Ophthalmic Surgeon at the Italian Hospital, the Royal National Orthopaedic Hospital and to the Willesden Urban District Council.

His time was so fully occupied that it is not surprising that he wrote but little; such papers as did come from his pen will be found in the Proceedings of the Ophthalmic Section of the Royal Society of Medicine and the Transactions of the Ophthalmological Society of the United Kingdom, Vols. XXXIV, XXXV; while his only communication to our columns will be found in Vol. V, p. 68, a short note of a case of extreme degree of myopia; his papers were entirely clinical in type.

Oliver served as one of the Hon. Secretaries of the Ophthalmic Section of the British Medical Association at the Portsmouth meeting in 1923, while at the time of his death he was Junior Secretary of the Ophthalmic Section of the Royal Society of Medicine. He was one of the few surviving descendants of the Hunter family, being third in descent from the great morbid anatomist, Matthew Baillie, whose mother was Dorothea, sister of William and John Hunter.

WE regret to record the death on January 13, 1926, of Mr. A. W. PRICHARD of Bristol, at the age of 73.

Mr. Prichard was the son of Augustin Prichard, surgeon to the Bristol Royal Infirmary, and a grandson of J. Cowles Prichard, F.R.S., the ethnologist. He was educated at Clifton, Bristol Infirmary, and University College, London. He qualified in 1874 and was House Surgeon to the Royal Westminster Ophthalmic Hospital. He practised in Bristol; was surgeon to the Infirmary, and in 1906 he became Consulting Surgeon to the Institution.

For more than fifty years he was in charge of the Bristol Eye Dispensary in Orchard Street; and he was also Honorary Consulting Oculist to the Royal School of Industry of the Blind.

NOTES

Death

WE regret to announce the death on March 15, after a brief illness of Mr. INGLIS TAYLOR, Consulting Surgeon to the Western Ophthalmic Hospital.

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Appointment

Capt. V. D. NIMBKAR has been appointed Honorary Surgeon to the Government Ophthalmic Hospital, Madras.

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Oxford Ophthalmological Congress

A DISCUSSION will be held on Thursday, July 15, on Sympathetic Ophthalmitis to be opened by Mr. M. L. Hepburn, followed by Mr. S. H. Browning and Dr. T. Harrison Butler.

The official dinner of the Congress will take place on July 15 in Keble College Hall.

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Royal London Ophthalmic Hospital Dinner

THE annual dinner of past and present students of the Royal London Ophthalmic Hospital was held at the Langham Hotel on February 11, under the chairmanship of Sir Thomas Barlow, Bart., K.C.V.O.; more than 70 alumni of the school and guests were present.

The Chairman in proposing health and prosperity to Moorfields Hospital gave most interesting reminiscences of the old hospital and its staff 48 years ago, and dealt in an affectionate manner with the giants of those days, Sir Jonathan Hutchinson, Mr. Waren Tay, Mr. George Lawson, and Mr. Edward Nettleship. The Chairman of the Hospital and Mr. Hepburn responded to the toast. That of the visitors was given in a neat oration by Dr. Gordon Holmes

and to it replied the President of the Royal College of Surgeons and the Director-General, Army Medical Service. Mr. J. Herbert Fisher proposed the health of the Chairman and Sir Thomas Barlow briefly replied. Mr. Hudson proposed that of the dinner secretaries, Sir William Lister and Mr. Goulden, to whom the success of these annual gatherings is so largely due.

Among other guests, the Directors-General of the Naval Medical Service and the Royal Air Force Medical Service were present.

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The Optical Convention, 1926

THE Optical Convention of 1926 meets under the Presidency of the Astronomer Royal, Sir Frank Dyson, supported by a distinguished cohort of Vice-Presidents, which includes the President of the Ophthalmological Society of the United Kingdom, at the Imperial College of Science and Technology, South Kensington, from April 12 to April 17 inclusive.

Previous Conventions were held in 1905 and in 1912 and were very successful in the production of many valuable papers. The present Convention promises to be well up to the standard of its predecessors. A large number of interesting papers have been promised, and a representative exhibition has been arranged together with a series of popular lectures. Arrangements have also been made for various social entertainments including a reception.

Applications for membership should be addressed to the Secretary, 1, Lowther Gardens, Exhibition Road, London, S.W.7.

FUTURE ARRANGEMENTS

1926

April 9.—North of England Ophthalmological Society at Newcastle.

April 29—*May* 1.—Ophthalmological Society of the United Kingdom (Annual Meeting).

May 10—12.—Thirty-ninth Congress of the French Ophthalmological Society.

May 14.—Royal Society of Medicine, Section of Ophthalmology.

June 11.—Royal Society of Medicine, Section of Ophthalmology (Annual).

July 14—17.—Oxford Ophthalmological Congress.

July 21—23.—British Medical Association at Nottingham.